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Workshop Proceedings

1988 NAI NATIONAL INTERPRETERS WORKSHOP

Edited by Debra M. Erickson

INTERPRETERS WORKSHOP
NATIONAL 1988

Charting
A NEW COURSE

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WORKSHOP THEME

CONTINUING OUR LEGACY: CHARTING A NEW COURSE

Town and Country Convention Center
San Diego, California
October 24-28, 1988

BEST COPY AVAILABLE

1988 National Interpreters Workshop

Workshop Proceedings

Edited by Debra M. Erickson

National Association of Interpretation

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Preface

When the Association of Interpretive Naturalists and Western Interpreters Association merged, a collective body of the most talented interpretive professionals united together to continue the growth of our field. Together as the National Association of Interpretation, we have charted a new course and through our first annual meeting, have created one of the finest publications ever produced in the field. No statement can better sum up this workshop and its proceedings than the following:

"I find the great thing in this world is not so much where we stand as in what direction we are moving. To reach port, we must sail sometimes with the wind and sometimes against it--but we must sail, and not drift, nor lie at anchor."

Oliver Wendell Homes

This proceedings will help you continue sailing in the right direction at your site. You'll find it a literal cookbook for our profession. Need more resources to develop new programs? See *NatureScope Works: A Summer Science Program for You!* on page 115. Looking for some new ideas for training your interpretive staff? Browse through *Interpretation Training: Quick and Effective* on page 94. Do you want more of your visitors to read your interpretive graphics? Review *Writing Panels in "People English"* on page 204. Searching for ways to reduce vandalism at your site? Peruse *Reducing Vandalism in Interpretation* on page 254. Desire more information on preventing lawsuits at your site? Study *The Interpreter in the Legal Arena* on page 228. From frogs, archaeology, dinosaurs, trees, desktop publishing, birds, and preschoolers to bugs, computers, and poetry, you'll find this volume an important interpretive resource for all phases of your operation.

There are four people without whose help this publication would have never reached your hands. Cheryl Wahlin spent many hours typing papers into the computer. Mike Trigg reproduced all the graphics to make them camera ready. Dennis Simpson, my significant other, was very understanding when I spent hundreds of hours with the "other man," my Macintosh SE. And most of all I would like to thank the Program Chair, Doug Ruth, who spent countless hours burning the midnight oil with me, making edit, after edit, after edit, after edit. His faith in my abilities and his constant encouragement helped me finish one of the most challenging assignments I have ever been given in my interpretive career.

New Realms in an Old Order:
AAPRCO, Amtrak, the Railroads, and Interpretation

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Abstract

In 1971, Congress created the National Railroad Passenger Corporation (NRPC) or Amtrak, which like the U.S. Postal Service was to operate a public-service enterprise (intercity passenger trains in this case) on a money-making basis. Though NRPC has yet to make a profit, it has steadily reduced the amount of its subsidy and has brought the U.S. passenger train back from the brink of extinction. As it exists today the U.S. passenger train system has substantial historical and geographical significance that have endowed it with outstanding interpretive potential. Events and trends of the last decade have altered that potential; and public policy alternatives selected in the near future will determine the extent to which that potential can be realized.

Railroad equipment and facilities are themselves an appropriate focus for historical preservation and interpretation. Past efforts, however, much like those in maritime preservation, have met with only limited success because of obstacles in economics and public policy.

Introduction

America's passenger train network has a very high and generally unrealized interpretive potential. Public policy at federal or state level has not yet focused on that potential in any comprehensive or sustained way. Political manipulation of its route system and debate over whether it can (and should) survive have been the primary forms of government attention paid to the National Railroad Passenger Corporation (NRPC), which is better known by its marketing name, Amtrak. Although the route system has stabilized and the annual subsidy requirement is steadily shrinking, the NRPC is still viewed by some in government as an anachronism. In the words of one Reagan Administration official, "Amtrak is a rolling National Park."

Geography and Trains

The railroad passenger comes into relatively intimate contact with the countryside compared with the automobile driver. And the railroads, since they arrived first in 19th Century western America, typically occupy topographically optimal routes. Especially in mountainous country, riding the train while you read the map (or while an interpreter reads it to you) is arguably the most effective way there is to visualize geography. America's railroads feature such masterpieces of engineering design as Horse Shoe Curve in Pennsylvania, Moffat Tunnel in Colorado, the Lucien Cutoff across the Great Salt Lake, and California's Tehachapi Loop: all of which are documented by the National Park Service in the Historic American Engineering Record and some of which are National Historic Landmarks. Along with the broad patterns of American history that they embody, these features are themselves candidates for interpretation.

History and Trains

Nationwide there are thousands of historic railroad structures and buildings--including locomotives, cars, bridges, tunnels, and stations--that have been listed in the National Register of Historic Places. Several terminal stations, two maintenance facilities, and one Pullman car are National Historic Landmarks. Amtrak's economic survival strategies have resulted in many of these historic properties, such as St. Louis Union Station (a National Historic Landmark) and the first vista-dome passenger car (listed in the National Register) being retired from railroad use.

In recognition of the historical significance of the postwar streamliners from whence they came, Amtrak named its second-hand cars inherited from the railroads the "Heritage Fleet" following their rebuilding with head-end electrical power. In the wake of deliveries of newly built cars, however, the domain of the Heritage Fleet has shrunk. They operate today only in long-haul trains east of Chicago. When this 1940's equipment eventually disappears, a chapter in our history will disappear with it.

Railroad historic preservation shares the fate of maritime historic preservation. Both have a focus much larger than that of community historical societies that are the traditional grass roots of our historic preservation movement, and both are capital intensive to a degree that makes effective local-level preservation action virtually impossible. Deterioration of historic nautical vessels has reached a crisis to which the National Trust for Historic Preservation has responded with a nationwide initiative.

Railroad historic preservation needs a similar campaign. As small-town stations become restaurants, as urban terminal stations become shopping malls, as motive power and rolling stock of historic designs are retired, and as outdoor displays of historic railroad equipment succumb to weather and vandals, this heritage incontrovertibly diminishes.

Tourism and Trains

Many of the passenger cars that Amtrak has disposed of have found their way into private ownership and remain in service for chartered tours. These tours have proliferated as a result of the same federal deregulation that has produced recent dramatic growth in bus tours. Today there are some 378 privately-owned railroad passenger cars available for charter or otherwise operated in Amtrak's trains. The individuals and corporations who own this equipment have formed the American Association of Private Railroad Car Owners for mutual aid and advocacy.

Although a railroad sleeping-car tour is in many respects analogous to a bed-and-breakfast inn in a historic house, the Internal Revenue Service to date has ruled that railroad equipment--like nautical vessels--is ineligible for National Park Service certified historic preservation investment tax credits. Hence, owners are denied this incentive to preserve or to rehabilitate their cars authentically. Observation cars with streamlined ends and three of Pullman's five types of sleeping-car accommodations already survive only in private ownership.

Conclusion

If the nation is to keep intact what remains of its prejetliner travel heritage, the private owners and nonprofit institutions that possess these remnants must be provided with the same philosophical perspectives and economic incentives common to their counterparts in other realms of historic preservation.

Check It Out!

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Abstract

Students! They are many--we are few. How can we possibly reach them? This is the challenge interpretive institutions face today. Limited staffs plus declining funds needn't equal defeat. One simple answer is a rich resource waiting to be tapped: teachers. The tools required for tapping this resource: Self-contained kits and training.

This combination has spelled success for the San Diego Zoo. What began as an experiment in 1986 now plays an important emerging role in our efforts to educate the 395,000 elementary and secondary students of San Diego to our wildlife cause. This paper examines our on-grounds check-out kits. We will explore these programs looking at everything from development to evaluation. We believe that the same benefits we enjoy are also available to you through this innovative interpretive method.

What Is a Kit?

It's a simple-to-use, self-contained learning unit in an easy-to-carry tote bag. Picture our first kit: a canvas tote bag, a marked zoo map to follow, and nine zip-lock vinyl envelopes--each containing a wildlife treasure and a laminated information card (Figure 1). The kit's message is conservation. It's called "The Conservation Safari Kit." The treasures include a flamingo feather, rhinoceros pill, leopard tooth, camel dung, giraffe-hair bracelet, kangaroo-skin change purse, tiger claw pendant, a bottle of jojoba hand cream, and a scarlet macaw feather. The challenge: uncover the mystery as to what the items are and where they originated before you reach the corresponding stop on the map. Once you reach that point, the story of the item unfolds as you read the laminated information card (attached to the plastic envelope). Along the way students explore the items. Teachers pose questions written out on the back of the information cards asking how these treasures fit into the environmental picture. There are prerequisites for using the kit: Groups must qualify as a licensed school, and teachers must attend a three-hour workshop where they become familiar with the kit and the subject matter.

Why Do a Kit?

Quality Control of Information

Teacher: "Mary, come on over here and run your fingers down the sheep's back."
Mary: Tentative and unsure, runs her hand down the sheep's back.
Teacher: "Describe to me how it feels."
Mary: "Warm, soft, and bumpy."
Teacher: "What a wonderful description, Mary. Do you know what this special

covering is?"
Mary: "Nope!"
Teacher: "Mary, this is cotton. It's the same thing your dress is made from."

Believe it or not, that very conversation took place in the Children's Zoo paddock at the San Diego Zoo. As an educator for the Zoo, I stood appalled at the misinformation this child was receiving during her "educational" field trip to our zoo. This problem of misinformation is not unique to our zoo. There are thousands of myths, along with volumes of written misinformation about most specialized subject matter. Think of the time it takes for you as an expert to stay abreast of the ever-changing information. It's simply not feasible to ask our visitors to be a reliable source of information without our help. The kit concept alleviates the misinformation problem.

A Way to Reach Large Numbers and Still Be Cost Effective

No question about it, our relatively small staff of educators could never service the thousands of students entering our gates each month. Looking at our records, it was sad to see that due to the labor-intensive requirements of our special staffed Zoo programs, we had to charge a fee. With school cutbacks, fewer schools were able to participate in these structured programs each year.

We're very proud that in 1987 more than 30,000 students benefited through participation in our structured programs, especially since our institution absorbed the costs for more than 22,000 of them. But we had to look hard at the more than 98,000 students visiting our facilities in a self-guided capacity with free admission. We wanted an opportunity to have more direct impact on the educational quality of every child's Zoo visit. The kit potentially reaches every student entering our gates, and requires minimal labor--which translates into cost-effective programming for both the Zoo and the school system.

A Medium Allowing for Hands-on Participation by Every Student

Countless research papers, such as Rosenfeld, 1980, cite the zoo visitors' search for interaction. Many more research projects have confirmed the need for participatory learning methods in order for "fruitful learning, real learning--leading to new understanding, new attitudes, new behaviors to occur only when the person as a whole is actively engaged intellectually, emotionally, and practically through doing." Research information like this validated the kit concept that tactile interaction by all of the participants is as important as the animal and plant information we provide.

Where's Help? Tapping the Teacher Resource

After conceiving the idea of a training program which would prepare teachers to use these kits, we went about looking for the "hook" that could persuade them to participate. Recalling our own classroom experiences, we remembered a constant time crunch and the critical need for simplicity. How could we lure teachers out of their homes on Saturdays asking them for three hours of preparation time outside of their class time? We decided to use these measuring devices for determining whether or not a workshop is worth the teachers' time:

- Does the workshop cover theory, or is it practical information they can use now?
- Do they go away with their hands full, or do they have to rely on their memory and cryptic notes to recall points of importance?
- Is the presented concept simple, or do they have to study up on the subject matter for two years before they're ready to use it?
- Is it fun?

We were sure that if we could create a training program that measured up well to these criteria, while offering an opportunity for a hands-on experience for their students, and at the same time provide a program that would not create funding problems for either the Zoo or the school system, we could get the teachers interested enough to use the program.

How We Did It--Our Road Map to Success

In 1986, we began developing the first kit, guided by our three major considerations:

- Quality control of information
- A way to reach large numbers and still be cost effective
- A medium allowing for hands-on participation by every student

Live animals could not be used in a self-guided program due to the expertise required when handling exotic wildlife. A quick look around unearthed many unused or underutilized artifacts (nonliving natural items that have been changed or modified by man) and biofacts (nonliving natural items in their natural state). We couldn't imagine many kids that wouldn't find examining a real giraffe-hair bracelet anything but fascinating. A natural benefit of using the artifacts and biofacts is that we can directly tell our Zoo's most important educational message, the message of conservation. Conservation Safari Kits were born.

Creating a product that is simple for teachers to use was no problem at all. With the items we would use identified, all we had to do was type the artifact or biofact information on large index cards, have the cards laminated for durability, attach the cards to the items and, include a map to follow. Of course, we incorporated open-ended questions, questions to ponder, and activities to do, since we believe that teaching should stimulate output from the student rather than force input from the teacher.

Teachers using our kit program no longer have to extensively plan their Zoo field trips or research background information, since the kit is completely self-contained (convenient carrier, map to follow, information to give, and questions to pose). The prerequisite of workshop training not only prepares the teachers for their field trips, but also helps prepare students with practical classroom ideas for teachers to use weeks in advance of the actual excursion. Each workshop participant receives:

1) A materials packet--including information that covers everything from ways to design creative bulletin boards to specific topic information.

2) A Zoo tour that follows the actual field trip route of the kit.
3) Instruction on practical teaching methods to use in our special setting.

After developing the first kit, we piloted our first workshop. We found that the teacher audience was so responsive, expansion was immediately necessary to keep up with our growing market. We began to develop a network system with community sources that could aid us in our expansion effort. We asked ourselves who could help us in providing the kind of items used in our kit program. U.S. Customs quickly came to mind.

After numerous phone calls and quite a few letters, we found that U.S. Customs used U.S. Fish and Wildlife as the clearinghouse for confiscated artifacts and biofacts. More letters followed, and finally our efforts culminated with a trip up to the Los Angeles office of U.S. Fish and Wildlife. We discussed with the most senior agent what we would like from their office. With our goals and objectives clearly stated, they were happy to assist us in our efforts to educate the public. We were even able to gather items for educational use on that very first visit. Since that time, we have provided the agency with kit scripts and items of interest including both articles and letters that are connected with the program. As time progressed and our relationship flourished, they invited us to send special-request lists when items were needed, and to visit their L.A. warehouse on an annual basis to gather new items for our ever-expanding program.

Another invaluable resource was found in another department within our own institution--our Pathology Department. Between these two sources, we were able to quickly duplicate and create new kits as the market demanded. During this entire growth process, we continually collected data through teacher evaluation sheets, and initiated a graduate student project evaluating the kit program from an objective point of view.

Evaluation--The Never-Ending Story

Every program has room for improvement and growth. Thanks to evaluation, in two short years our kit program has come a long way. Kits have been modified many times using insight provided by both students and teachers. From one kit in 1986 to 12 completed kits in 1988, we can now provide access for more than 70,000 students each year to a free, custom-designed, educationally sound field trip at the San Diego Zoo. We've expanded the program for both the Zoo and the San Diego Wild Animal Park. We've developed three specialized Critter Kits--kits that are designed for preschool/kindergarten visitors. Evaluation told us that this youngest crowd represents our fastest growing school market. Teachers at every level have expressed their appreciation for the personal growth they've experienced as they continue to broaden their own base of wildlife knowledge. We constantly receive requests for new topics and more specialized age-appropriate kits.

Evaluation also gave us insight into the fact that teacher and student interests often differ. While teachers found camel dung somewhat disgusting, students found it fascinating and rated it number one as the most interesting of the artifacts and biofacts used in the Conservation Kit! Workshop and logistic considerations should respond to teacher needs, while field trip content and components should look toward student interests. By including local teachers and administrators in the development process, kits became popular even before we began to promote them.

Some evaluative data surprised us with program benefits we'd never anticipated, while other data confirmed the fact that our program goals and objectives were being met. We found that general zoo visitors often listened in on teacher presentations, extending the learning to an audience we hadn't targeted. This opportunity for teachers to educate our general visitor seems to create a "Zoo ambassador" mentality in our trained teachers and in turn helps to develop a feeling of intimacy between the Zoo and our workshop graduates. We are still enjoying teacher comments like "now my Zoo field trip is focused and exciting" and "improved critical thinking skills and dilemma thinking in my students are enhanced." Kids say things like "I feel the Zoo made a special trip just for me" and "It was neat being able to touch things that other people don't get to use."

Evaluation continues to assist us in mapping out our kit direction for the future. Teachers and students are happy to provide information about the program, feeling good about the fact that we're interested enough to listen. The kits' maintenance requirements have proven minimal, with occasional need to replace the vinyl envelopes, and a very infrequent need to replace an object due to breakage, loss, or wear. We look forward to the exciting changes that our kit program will surely undergo next year as we continue to listen to our most important information source, the users of our programs.

Conclusion--We Did It, So Can You!

As you can see, the formula is a simple one: teachers, information, training, and a source for hands-on objects. There are thousands of teachers already being paid to educate our young guests. They're looking for simple ways to better inform their students about the world around them. Whether in a museum, zoo, or park, they want to give students information that's interesting and accurate. Most recognize that the trick to making learning fun and at the same time memorable is to include the learner in the learning process through participatory opportunities. Community sources such as antique shops, government agencies, and private collectors would most likely jump at the chance to share their treasures with you, if they could be assured that their objects would help to create a love for the subject matter they represent. We're certain that any interpretive institution interested in using this formula can do so with great success.

The stop-look-and-listen approach worked for us! Stop, evaluate the quality rather than quantity of information being given; look, discover the hidden treasures in your old cabinets and drawers and connect with community resources for help; and listen, your best information comes directly from the mouths of your users.

By using the "check-out" opportunity for our visitors, we experienced greater penetration of our learner group; increased accuracy of educational information to our visitor; and renewed, stronger, overall support of our institution from the teaching community.

FIGURE 1. Example of a Conservation Safari Kit Card

Front side of the card

#3- WALLABY

Stop! Don't pass the wallabies. The wallaby is a close relative of the kangaroo and belongs to the marsupial group. What makes marsupials different from other animals? You're correct if you answered "it carries its baby in its pouch."

The artifact that you were holding once served as a covering for a kangaroo. Can a kangaroo or a wallaby remove its coat like you and I? Of course not! Therefore, is it renewable or nonrenewable? The answer is nonrenewable. Some kangaroos and wallabies are endangered. However, in certain areas of Australia where they are numerous, they have become pests to the farmers. One solution to this problem is culling. Culling is the right (with the permission of the government) to kill an established number of animals from a herd. Can you think of other solutions? How can culled animal parts be used? Should they be used or discarded? Does the use of these parts encourage people to kill animals not scheduled for culling? These questions and others are often debated by conservation groups.

Perhaps you could form two debate teams among your class and explore this two-sided issue.

Back side of the card

TOUR DIRECTIONS

A) REMOVE ITEM #3--PASS IT AROUND AND DISCUSS IT.

  1) WHAT PLANT OR ANIMAL DO YOU THINK IT COMES FROM?

  2) IS THE ITEM A NONRENEWABLE OR RENEWABLE RESOURCE?

B) MOVE ON TO THE ENCLOSURE MARKED #3 ON THE MAP.

Wildlife Rehabilitation as an Interpretive Tool

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Abstract

Wildlife rehabilitation has been used as an educational tool by the Three Forks Nature Center in eastern Oklahoma with many benefits to the public and wildlife alike. Wildlife rehabilitation at the center has resulted in better public relations, increased visitation, and a greater awareness and appreciation of wildlife. A high degree of interpreter/visitor interaction is important for effective use of wildlife rehabilitation as an educational tool.

Introduction

The decision to expose animals being rehabilitated to the public has been debated amongst naturalists in the past and will most likely be debated in the future as well. The Three Forks Nature Center, run by the Oklahoma Division of State Parks, has chose to use wildlife rehabilitation as an interpretive tool. The pros and cons of using wildlife rehabilitation as a method of educating the public about wild animals was weighed before a management decision to use or not use was made. The term rehabilitation as used in this presentation includes injured, sick, and young animals brought to the center for treatment and/or hand raising and future release.

Wildlife rehabilitation has been used effectively for the past five years by the Three Forks Nature Center as an interpretive tool. It has helped in exposing the public to the real work of nature and in dispelling the "Bambi" concept of the forest. When properly used, these animals make a powerful education tool. However, caution must be used and the simple exposure of the animals to the public is in itself not an effective mode of information transfer. Personal contact between an interpreter and the visitor is an essential element in making wildlife rehabilitation an effective tool. Without the personal contact with an interpreter, the potentially positive situation may have a negative educational value.

Benefits

There is a great public relations benefit as the nature center receives and takes care of the animals brought to the center by local people and other government agencies. The public perception of government employees is often less than desirable and the willingness of the nature center to help animals demonstrates the public servants compassion for wildlife. Handling situations where the likelihood of the animal surviving is slim or impossible is a delicate situation that must be handled with care. The method of delivering the truth to people that have gone out of their way to bring the animal in for care is very important. No matter how tempting it is to cover up the inevitable, the truth about the animal's chances should always be given. The death of an individual animal should be put into perspective as it relates to the overall cycles of nature, while at the same time not belittling the efforts of people to save those same animals.

Increased visitation by the public is also a benefit of the center's rehabilitation program. Many visitors become repeat visitors as the result of being exposed to the rehabilitation process. People come back to see how the animals are doing, i.e. whether they have grown up, recovered from their injuries and/or released back into the wild. Visitation at the nature center has increased 400 percent in the last five years.

A greater awareness about the needs of animals is created whenever people are exposed to the work it takes rehabilitating wild animals. The presence of an interpreter can and should dispel many of the misconceptions about the so called fun of raising wild animals and making pets out of them. The real world of parasites, disease, teeth, and talons, along with the constant clean-up efforts should be emphasized to deromanticize the raising of wild animals in captivity. It should also be stressed that the animals being rehabilitated will be released into the wild whenever possible and not made into pets for perpetual display. The negative impact of the wild animals exposure to the public should also be discussed during dialogue with the public.

Rehabilitator's Responsibilities

The proper maintenance and care for the animals is the number one responsibility of the rehabilitator. Cages and flight pens of appropriate design to handle a variety of animals are needed for the wide array of animals frequently brought to nature centers. Yet it's impossible to create ideal facilities for the rehabilitation of all animals that an interpreter might have deposited on the doorstep, but attempts should be made to create facilities for those types of animals that are brought in on a more frequent basis. Before rehabilitation is undertaken, a veterinarian should be consulted. Some veterinarians will not take care of wild animals in their clinics so advanced contact is important to ensure professional medical care. Judgement calls must be made in determining which animals can withstand exposure to the general public. Those animals that would be placed under too much stress due to this exposure should be kept away from public view. The public should know that it's not always in the animal's best interest to be on display. Proper training should be provided to make the animals efficient at capturing or handling food before they are released into the wild. A gradual weaning process in usually in order.

Conclusion

A high level of interpreter/visitor interaction is important in making wildlife rehabilitation a positive and beneficial educational experience. The lack of personal contact with the visitor minimizes the effectiveness of rehabilitation as an interpretive tool and may in fact have negative effects.

Improving the Monorail Tour: An Interpretive Experience

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Abstract

Communicating biological concepts, statistical information, and amusing anecdotes about 175 animal species within fifty minutes is the challenge of the Wild Animal Park's monorail tour. Recently, an enhancement program of cooperative proportions was initiated to change the way monorail riders and driver-guides think. The program resulted in up-to-the-minute tour material presented in a manner which inspires the creativity of driver-guides and provides a stimulating learning experience for the riders.

Introduction

The monorail tour at the Wild Animal Park provides exclusive viewing of the popular field enclosures and boasts an 85 percent ridership. In 1987, a program to enhance the monorail tour was designed by the consulting firm, Active Environments, then modified and implemented by a committee of employees representing key departments. The cooperative effort resulted in up-to-the-minute tour material presented in a manner which inspired the creativity of drivers-guides and provided a stimulating learning environment for the riders.

Committee members participated in the collection and verification of data on hundreds of different topics. This data, which could sometimes be regarded as less-than-exciting facts to the average visitor, was carefully transformed into easily understood and thought-provoking "blocks" of information. Blocks fall under four categories: biology, ethology, conservation, and Park operation. Driver-guides were given minimum and maximum parameters for the numbers and types of blocks they could use in their tour.

The essence of the project was to provide a working format through which the driver-guides can obtain all the statistical and interpretive information they need to present a tour that is as accurate as it's enjoyable for both the riders and themselves. The outcome is a formal system which maintains the sharing of knowledge between departments and channels it efficiently and precisely to the employees whose job it's to carry the message to the public.

What Is It?

Q: *What has 125 pairs of eyes, the same number of camera shutters, and a thirst for knowledge?*
A: *A monorail tour at the San Diego Wild Animal Park.*

Located deep in the San Pasqual Valley of southern California, the San Diego Wild Animal Park offers a unique presentation of wildlife and habitat. Its 700 acres of semi-desert provide the setting for naturalistic enclosures which exhibit a wide variety of

African, Asian, European, Australian, and American animals. The layout of the Park is divided into two areas of accessibility. The first area the visitor encounters is Nairobi Village, 17 acres of facilities and exhibits including primate enclosures, small mammal enclosures, and walk-through bird aviaries. A mile-and-a-half hiking trail surrounds Nairobi Village.

Seventy-five percent of the Wild Animal Park's mammal collection and 35 percent of the bird collection reside in the second area, simply referred to as "the field." Viewing of this area is best on board the five-mile monorail ride, called the WGASA Bushline. While the monorail tour is optional, consistently 85 percent of our visitors choose to take our "sit-down safari."

From the visitor's standpoint, the monorail provides the best method of viewing a large majority of the animals exhibited at the Park. For the Operations Department, the monorail is our "E ticket", bringing in a 10:1 profit--for every dollar we spend on the monorail, we make ten dollars in return. And for those of us concerned with the potential for interpretation, the monorail is an educator's field day. A captive audience, the best visual aids a wildlife enthusiast could imagine, and more information than an interpreter knows what to do with. This all adds up to a perfect medium for getting the conservation message across.

How Did It All Begin?

The Wild Animal Park's monorail tour has been in operation since the Park opened in 1972. Originally the tour covered five miles and 50 animal species in 55 minutes. Today, the tour covers the same five miles but *340* animal species in 55 minutes (Driver-guides have simply learned to talk faster). The original tour script was composed by a small group of bus drivers transferred from the San Diego Zoo to the Wild Animal Park at its opening. Additional driver-guides were trained by word-of-mouth. Manuals, formal training, and evaluation programs didn't exist.

Considering the monorail took in over two million dollars last year, carried just under one million riders, and covered more than 50,000 miles of track, it's obvious that the operation deserved a lot of attention. And attention is exactly what the Wild Animal Park was giving its exhibits and attractions last year. Through marketing studies, we learned a lot about our visitors: their average age, education, and income, as well as their likes and dislikes about the Park. From this information, areas were targeted for upgrade so that our visitors would find their stay at the Wild Animal Park more satisfying. The monorail tour was included in this process of "change-for-the-better."

Where Is It Going?

For the purpose of interpretation, the monorail experience can be divided into three identifiable components: pretour, tour, and posttour. Formerly the pretour consisted of a walk through a sterile queue area with a long wait at the end, devoid of any mental activity. Once visitors received the brief instructions to board the train, visitors were treated to a narrated tour that included the identification of more species than the visitor even thought existed, interspersed with any interesting or amusing anecdotes that the driver-guide had managed to hear through the grapevine. The posttour simply meant getting off the train.

The Monorail Enhancement Program aims to improve the visitor's experience at the monorail from beginning to end, maintaining a continuum of quality education and entertainment throughout the three tour components.

The Active Approach

Exhibit designers fashioned the passive pretour component into an area rich with options to keep guests occupied and informed. After giving the queue area a welcoming entrance, they added an attractive and cooling water element, landscaped the aisles with interesting plants, and included an aviary filled with active and beautiful finches. Six major graphic panels are sprinkled throughout the waiting area. These panels prepare visitors for the upcoming experience--serving to remind them that wildlife is a part of their world, too. Just before visitors board the monorail itself, their guide greets them and introduces a five-minute video tape. The tape touches on the plight of wildlife today, points out conservation projects at the Wild Animal Park, and prepares visitors for what they will see during their ride.

Once on board the monorail, the rider is introduced to the marvels of wildlife via a series of carefully chosen blocks. A block is a discussion of a species' natural history information which then leads into discussion of a biological, ethological, or conservation concept (See Figure 1). The discussion of the concept transcends the individual animals and deals with large groups of animals, how nature works as a whole, or conservation issues that apply to all animals. Attention-getting physical features or behavior, anecdotal information about individual animals, interpretive techniques including humor, and miscellaneous facts are woven into the structure of the block to help gain and hold the guests' attention.

Ideas for blocks can be submitted by any employee. These suggestions forms are reviewed by the committee. If accepted, an assignment is given to one of the committee members to develop the block. Blocks are written in semi-outline form. Actual scripting is avoided to allow flexibility in presentation style. However, enough detail is given so the concept and how it relates to the animal is clearly understood. There can be many blocks written that deal with one animal. There can be a block that deals with many or all animals.

Each block consists of a hook, link, concept, interpretive element, supportive information, and an anecdote, if applicable. The hook serves to catch the attention of the listener and direct it to a certain animal, area, or event. The link then introduces the concept through a statement about the particular animal, area, or event pointed out. The concept portion of the block is a discussion of a concept or message that transcends the individual species being viewed and deals with an idea that tells something about conservation issues, Wild Animal Park functions and accomplishments, or reveals some aspect of how nature works. The interpretive element combines factual information with a stimulating explanation of that information. The interpretive element is optional, it's always available and happens when/if a driver-guider chooses, usually on the spur of the moment.

Supporting the blocks are animal fact and anecdote sheets. The animal I.D. sheets are one-page synopses of the natural history information on a species, containing the species' size, range, diet, habitat, population status, captive history and behavior. Each I.D. sheet relates information specific to the Park collection when relevant. The anecdote sheets deal with interesting anecdotes about the species and about the individual animals that live at the WAP. These anecdotes can be humorous, sad, amusing, or enlightening. The only rules are that they must not misinform the public and they must advance the goals of the Wild Animal Park.

Most important to the driver-guides, the block system allows for great flexibility. The tone of the tour can be influenced by altering the number of blocks used from each category in a tour. While guidelines are set for appropriate usage of the blocks, and each block offers an example method of interpretation, the actual scripting is at the discretion of the individual driver-guide. Inherent in the success of any formalized presentation system is the preservation of the individual presenter's style. Driver-guides fashion their tours around an average of 25 blocks.

After 50 minutes of visual and audio stimulation, the monorail riders disembark. The driver-guide avails himself/herself for a brief question & answer period. During this past summer, we rented World Wildlife Fund's traveling exhibit, "Cargo to Extinction," and placed it near the monorail unloading dock. Riders were encouraged to visit the display and learn more about wildlife trade. In the near future, we hope to construct a permanent exhibit at the unloading dock. Plans for the display include graphic panels and props illustrating the dilemma of today's wildlife. Take-home brochures would be available for both children and adults offering suggestions about what they can do to help wildlife conservation.

Assessing the Success of the Program

The services of an evaluation consultant, Claudia Derwin, were contracted to develop and implement the formal evaluation of the monorail's interpretive plan. To date, we have completed pretests of the queue area and tour. Evaluators collected data through observation, by recording candid comments, and by conducting short interviews with visitors. Three-hundred-and-ten interviews were conducted during busy holiday periods. We hope to complete the evaluation of the monorail experience by the end of this year.

Another form of evaluation needed for the success of this program was a means of identifying and maintaining quality tours. The committee developed a checklist of criteria for an acceptable tour presentation and distributed the guidelines to the driver-guides. Currently, each driver-guide's tour is evaluated by members of the committee, a process which includes a discussion of the evaluation immediately following the review. The sole intent of the evaluation is to coach the driver-guide, helping him/her to improve when improvements are necessary, and to recognize quality work, commending those that achieve it.

Since our intent is to improve the monorail experience for riders and driver-guides, it's equally important to record the impressions of both. And if interpretation is an informal affair, let me offer a couple of comments--not for evaluation, but for interpretation--about the success of the Monorail Enhancement Program. A recent visitor to the Park wrote a letter stating, "Our monorail driver was factual and informative, but also shared stories and happenings about the animals." And a driver-guide's response to the new system was, "Best of all is the support we now receive from other departments--their accuracy and faithfulness in supplying information is great."

Figure 1. Block Examples

Pinioning

HOOK: Have you ever wondered how we keep all these birds in the exhibits?

LINK: We pinion one wing of each bird to prevent them from flying away.

CONCEPT: Pinioning is a permanent method of limiting a bird's ability to fly. In chicks, the tip of the wing is removed, preventing development of the end digit and the last 5-10 primary feathers. In adult birds, it's a slightly more complex surgical process that involves permanent removal of the already developed end digit and its primary flight feathers. Birds handled in this manner retain limited flight capabilities, but are kept somewhat off balance because of the greater surface area provided by one wing. We do this to birds that normally spend most of their time on the ground. Birds that spend more time in the air are kept in aviaries in the village.

INTERPRETIVE ELEMENT: Can you tell which birds belong to us and which ones are freeloaders? The freeloaders can fly freely in and out of the enclosures.

Alert Circle

HOOK: Any group of animals in a herd posture

LINK: It looks like the members of this herd are positioned in a haphazard fashion, but there is more to it than that. We call this positioning of a herd an alert circle.

CONCEPT: In a circle, all animals look in different directions which:

- Provides sensory (sight, sound, smell) coverage of all approaching predators
- Puts animals in position to defend against attack
- Protects babies by having them in the middle of the group

INTERPRETIVE ELEMENT: How would you sneak up on these guys?

Rhino Dung Piles

HOOK: Point out rhino dung piles

LINK: Rhinos tend to defecate in the same place, then walk in their manure. Why? Possibly two reasons--to mark their home range and to lay down a scent trail to avoid getting lost.

CONCEPT: Conservation of natural behavior. The above behavior is the same in the wild and at the Wild Animal Park.

INTERPRETIVE ELEMENT: How do your pets at home mark their territories? Keepers claim they've trained the Indian rhinos to defecate in the same place so it's easier to clean up after them!

Bibliography

Desmond, Tim (1987). *Monorail Tour Presentation Manual.* San Diego Wild Animal Park. Unpublished.

Donahoe, Sydney (1987). *Visitor Data is a Three-way Street.* Unpublished.

Interpreting Our Heretics

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Abstract

Just more than a decade ago, Kenneth Nyberg blasted the interpretive profession in a paper presented at a national conference. This paper provides a response to Nyberg's assertions that interpretation is "largely unnecessary" with reference to the philosophical underpinnings of the profession and with particular emphasis from Freeman Tilden's *Interpreting Our Heritage.*

Introduction

In a thoughtful essay titled *Some Radical Comments on Interpretation*, Kenneth Nyberg (1977) criticizes the interpretive profession as "not only largely unnecessary, but significantly more likely to produce harm than benefit." Nyberg contends that the environmental interpreter is determined to deny to park visitors "the inspiration of speculation." Nyberg argues that "an environmental experience is far more often precluded by interpretive programs than facilitated." His seemingly blasphemous proclamation is harsh--and, perhaps, accurate.

Nyberg's assault poses a deep and fundamental question that strikes at the soul of the interpretive profession. Do interpretive programs facilitate environmental experiences? Or, as Nyberg insists, do they preclude them? This article examines this question with reference to the philosophical underpinnings of the interpretive profession.

A Glance at the Past

The philosophical groundwork of the interpretive profession was initiated in the mid-1800s by early preservationists and park advocates. Frederick Law Olmsted (1865), designer of Central Park in New York, believed that beautiful natural areas have the capacity to engage the "contemplative faculty," a powerful individual response to the environment. He contended that parks provide an ideal setting for aesthetic cognizance and inspiration and thus, in and of themselves, can facilitate environmental experiences.

Olmsted stressed the importance of an independent response to nature. He was opposed to commercialism, crowding, and other intrusions upon the full engagement of the environmental experience, including inducements to become involved in structured activities. There's a strong element in Olmsted's writing of a "distaste for the mass man unreflectively doing what he is told to do and thinking what he is told to think" (Sax, 1980).

The implication of Olmsted's position is that interpretive programs do not represent the ideal in experiencing nature. This supports Nyberg's assertion that interpretation detracts from potentially rewarding environmental experiences.

Further evidence in support of Nyberg's suppositions is revealed by some of the interpretive profession's most esteemed spokespersons. Henry David Thoreau (1854) wrote that he went to the woods because he "wished to live deliberately, to front only the essential facts of life" and to see if he could learn what the woods had to teach. Recall that he went to the woods alone. Furthermore, he persuaded readers to be "the Lewis and Clark and Frobisher of your own streams and oceans; explore your own higher latitudes." Henry David Thoreau promoted the concept of self-sufficiency and self-reliance in nature.

Similarly, John Muir wrote about his beloved Sierras where "everything...is marching to music, and the harmonies are all so simple and young they are easily apprehended by those who will keep still and listen and look..."(Watkins and Jones, 1976). Environmental experiences, according to Muir, are not elusive.

Furthermore, the interpretive profession acclaims more recent advocates from Aldo Leopold (1949) to Sigurd Olson (1976) to Edward Abbey (1982) who also extol the virtues of self-sufficiency in the natural environment. All of these spokespersons, past and present, have held to the notion that this self-sufficiency can significantly contribute to rewarding experiences in nature.

How can the interpretive profession justify itself in its role of facilitating environmental experiences which seem so readily available and best experienced on a personal level? According to Nyberg, it can't and the solution to the paradox is to "simply abandon every interpretive program."

The Benefits of Interpretation

The literature on peak experiences indicates that the preparedness and perception of the individual influence the quality of the experience more than the objective nature of the experience itself. This contradicts Olmsted's assertion that parks in and of themselves facilitate environmental experiences. The setting isn't always enough for everyone. Consider the park visitor who is not familiar, and therefore not likely to be comfortable, with the resource. In contrast to Kenneth Nyberg's assertions, it would seem that an interpretive experience could be the bridge between the individual and the resource, thus encouraging inspiration and wonder.

The findings on peak experiences also could explain why people such as Thoreau, Muir, and Leopold were so able to attain intense environmental experiences. These men were all gifted individuals who were extremely perceptive. For them, self-sufficiency in nature was a way of life. Though ideal, perhaps, this certainly isn't true for most urbanized people of this day and age.

In this context, interpretation may be useful to prepare visitors for peak environmental experiences. Whereas Nyberg contends that interpreters tend to deny park visitors a sense of inspiration, it seems that just the opposite is true. The fact that many park visitors are on vacation indicates that other basic needs are met and that the visitors are in a favorable situation to seek enlightening experiences on a deep, searching level. It's the role of interpretation to facilitate this process. Interpretive programs provide the crux for Freeman Tilden's (1957) fourth principle of interpretation: "The chief aim of interpretation is provocation." The primary purpose is not merely to instruct, but rather to inspire and to stimulate park visitors to initiate their own discoveries.

William C. Everhart (1972) advocates that the greatest challenge facing our nation is the creation of a livable society; one that reveres all life, respects natural processes, and strives to improve the quality of life for all citizens. To enrich the quality of human life, it's necessary to promote an atmosphere that is as conducive as possible to the full growth and development of the human potential. According to Freeman Tilden, "the lifeblood of satisfying interpretation flows from the proper and ingenious use of exactly those devices of language that take the hearer or reader beyond the observed fact to, or at least toward, a certification of spirit." Rather than producing more harm than benefit, as Nyberg proclaims, interpretation has the potential to promote individual awe and understanding.

The ultimate goal of interpretation should be to promote opportunities for visitors to achieve peak environmental experiences. As Freeman Tilden reminds us, "the visitor's chief interest is in whatever touches his personality, his experience, and his ideals." Interpretation can contribute to the enrichment of visitor experiences because visitors are curious about, speculate upon, and seek answers to the forces of nature which have influenced the cultural and natural history of a park area. Tilden suggests that "interpretation should capitalize more on curiosity for the enrichment of the human mind and spirit."

In addition to enhancing the experience of the visitor, interpretation has the potential to benefit park managers as well. Interpretive programs may contribute to visitor understanding and appreciation of management policies and may establish public support or even improve public image. Interpretation, if done well, may reduce destruction and vandalism of park property. Tilden reminds us, "Nature and man are inseparable companions: They are one. If you vandalize a beautiful thing, you vandalize yourself. And this is what true interpretation can inject into the consciousness."

Not the least of the benefits of quality interpretation is the notion that it leads directly toward the very preservation of the resource itself. Interpretation may motivate visitors to take action to protect historic features or fragile natural areas. "Indeed," declares Tilden, "such a result may be the most important end of interpretation, for what we cannot protect we are destined to lose." As stated in National Park Service literature, "Through interpretation, understanding; through understanding, appreciation; through appreciation, protection."

Just as the goal of education is to develop self-sufficient learners, the ultimate goal of interpretation should be to promote opportunities for self-initiated discovery and personally enlightening experiences (Beck, 1986). Though Kenneth Nyberg contends that an environmental experience is far more often precluded by interpretive programs than facilitated, this doesn't have to be the case. Certainly, poorly designed and executed interpretive programs have the potential to preclude high-quality environmental experiences. However, interpretive programming may be structured to enhance the rewards of nature by promoting independent involvement with the environment and serendipitous intimacy with the landscape. Furthermore, it appears that Nyberg has forgotten that interpretation isn't mandatory, but that people seek interpretive experiences by choice.

Nyberg's "Radical Comments on Interpretation" includes the assertion that "the environmental interpreter is in the business of 'telling' reality, thus denying to all others present the inspiration of speculation." But good interpretation is much more than "telling reality." As Tilden asserts, "Interpretation is the revelation of a larger truth that lies behind any statement of fact." Nyberg has neglected to consider that the highest aspiration of the interpreter is to share the essence of the resource. This is no simple task and it requires a thoughtful, insightful approach. This approach is what Tilden calls "the priceless ingredient" and he contends that it is not factual but of the spirit. "This reverence is brought into interpretation," states Tilden, "by love."

The thrust of Kenneth Nyberg's argument is that interpretation is significantly more likely to produce harm than benefit. Yet it is clear that thoughtful, well-designed programs in which the interpreter shares personal insight and affinity for the resource are indeed of great benefit to the visitor, to park management, and to the resource itself.

Bibliography

Abbey, E. 1982. *Down the River.* New York: E. P. Dutton.

Beck, L. 1986. A Hierarchy of Interpretive Programs. *The Interpreter.* Winter.

Everhart, W. 1972. *The National Park Service.* New York: Praeger Publishers.

Leopold, A. 1949. *A Sand County Almanac.* New York: Oxford University Press.

Nyberg, K. 1977. Some Radical Comments on Interpretation. In Machlis, G. and Field, D. (Eds.), *On Interpretation: Sociology for Interpreters of Natural and Cultural History.* Corvallis: Oregon State University Press.

Olmsted, F. L. 1953. The Yosemite Valley and the Mariposa Big Trees. *Landscape Architecture.* 44:1. (Originally published, 1865.)

Olson, S. 1976. *Reflections From the North Country.* New York: Alfred A. Knopf.

Sax, J. 1980. *Mountains Without Handrails.* Ann Arbor: The University of Michigan Press.

Thoreau, H. D. 1960. *Walden.* New York: Signet Classic. (Originally published, 1854.)

Tilden, F. 1957. *Interpreting Our Heritage.* Chapel Hill: University of North Carolina Press.

Watkins, T. H. and Jones, D. 1976. *John Muir's America.* New York: Crown Publishers.

Evaluation: A Critical Management Process

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Abstract

A summary of the formal and nonformal segments of environmental education and interpretation in Pennsylvania serves as a starting point for the discussion of evaluation as a management tool. Discussion continues by demonstrating the need for evaluation and providing examples of evaluation techniques. Local research projects and published references serve as examples of various approaches to evaluation.

Evaluating Environmental Education in Pennsylvania

If diversity can be a measure of strength and health, environmental education appears to be healthy and diverse in Pennsylvania (PA), though it's not always focused or funded.

There's a small but active Office of Environmental Education within the PA Department of Education. It serves over 500 school districts in the Commonwealth. About 70 percent of these schools request direct assistance from the Office of Environmental Education (OEE). A Master Plan, designed in 1984, outlines significant components of environmental education operating throughout the state. For the purpose of this summary, a brief review of the status of formal and nonformal environmental education is helpful.

Formal Education

One of PA's twelve quality goals for education addresses environmental education in the formal classroom:

"Quality education shall help every student acquire the knowledge and attitudes necessary to maintain the quality of life in a balanced environment."

It's accurate to state that some schools are not teaching environmental education and that others are doing more than their share. Many schools integrate environmental education effectively into existing curricula. Some school districts incorporate environmental education into elementary science and require each grade level to participate in outdoor activities. Some school districts require all fifth or sixth graders to attend a resident camp for immersion in the natural world as part of their environmental education requirement. A few districts have identified a staff person as environmental education coordinator, thought this is most often a corollary duty. It's not readily known how many districts employ full-time environmental education staff.

The picture at the secondary school level is neither as clear nor as bright. A small percentage of schools offer environmental education electives at the senior high school level.

Nonformal Education

For the purposes of this discussion, nonformal environmental education refers to that conducted outside the traditional school setting. This includes organizations such as public or privately owned nature centers, resident centers and camps, parks and recreation areas, and zoos which are operated by local, state, or federal agencies. It also includes activities led by nonprofessionals in organizations such as scouts, youth groups, or sportsmen's clubs. Garden clubs with their nature and horticulture programs and civic organizations with special-interest education committees are all a part of the broad public involvement with nonformal environmental education in PA.

Conversations with outdoor writers, naturalists, or park and nature center personnel reveal the details are different but the message is the same, "We are doing the best we can with our limited resources to tell people what we believe is important and necessary."

Programs offered by these diverse organizations vary widely in content, quality, frequency, and impact. In most cases, there is no central direction provided by the agency. The individual field person chooses the activities and sets the priorities. In many of these agencies, education is a secondary goal and receives less attention and funding. Nearly all of these groups address audiences which voluntarily seek their services.

Evaluation Process--Why and How

Evaluation is necessary to identify successful programs and improve operations. What are the needs, purposes, and costs of programs? Are they worthwhile? Who benefits from them? All of these are part of the process. If the organization neither knows where it's going nor assesses progress towards its goals, it can never tell when it has arrived. Evaluation is easier when it's built into the planning process, for then it will not be overlooked.

The evaluation process is made simpler when information is available to the reviewer. When attention is given directly to what is being evaluated, programs can be evaluated in terms of attendance, efficiency of operation, fiscal soundness, practicality, and/or overall effectiveness. Programs without clearly stated goals are most difficult to evaluate with some degree of fairness. For this reason, goal setting and objectives are essential parts of the program planning process.

Evaluation of people addresses both the participants and the presenters. Techniques vary widely and need to incorporate both the art and the science of interpretation and education. Formal and informal peer reviews and observations, videotapes, and self-generated critiques can all be used as a part of the process of determining whether stated goals have been accomplished.

Evaluation of places such as parks, nature centers, and schools can be as complex as accreditation reviews or as simple as verbal feedback from site users. All information from these various sources is valuable when assessing these places. Perhaps the primary question regarding facilities will be whether they have provided the opportunity for the intended experience within a safe and desirable setting. All of these value-laden terms need to be considered at some point in the evaluation process.

The effectiveness and appropriateness of different evaluation methods for programs and people are discussed at length in Chapter 1 of *Interpretive Values* edited by Gary Machlis. A review of this material will illustrate low-cost evaluation methods such as peer review or observations and more complex methods such as questionnaires or interviews. The similarities and differences between program planning, program monitoring, impact assessment, and economic efficiency also are considered in this review. Some types of evaluation require more effort than others. Some are more resistant to bias than others. Understanding these characteristics will improve the quality of evaluations.

Bibliography

Bennett, Dean B. 1974. "Evaluating Environmental Education Programs." *Environmental Education.* Ed. by James A. Swan and William B. Stapp. Halstead Press, New York. pp. 118-164.

Bennett, Dean B. 1984. "Evaluating Environmental Education in Schools." Unesco-UNEP International Environmental Education Programme, Environmental Education, Series 12.

Bessken, Donna P. 1987. "An Essay on Evaluating Environmental Education in Pennsylvania," *PAEE Newsletter.* Vol. 11(2):5. (Spring).

Bessken, Donna P. 1987. "Evaluating Non-formal Environmental Education in Pennsylvania." *PAEE Newsletter.* Vol. 22(3):3-4. (Summer).

Disinger, John F. 1987. "Cognitive Learning in the Environment: Elementary Students." *ERIC/SMEAC Environmental Education Digest.* No. 2.

Lucko, Bernard, John F. Disinger and Robert Roth. 1982. "Evaluation of Environmental Education Programs at Elementary and Secondary School Levels." *Journal of Environmental Education.* Vol. 13(4):7-12. (Summer).

Machlis, Gary E. ed. 1986. *Interpretive Views.* National Parks and Conservation Association. Washington, D.C.

Ross, P.H., H.E. Freeman and S.R. Wright. 1979. *Evaluation: A Systematic Approach.* Sage Publications, Beverly Hills.

Suchman, E.A. 1967. *Evaluative Research: Practice in Public Service and Social Action Programs.* Russell Sage Foundation, New York.

Weilbacher, Michael. 1987. "A Report Card on Environmental Education in Pennsylvania." *PAEE Newsletter.* Vol. II (1):1+5. (Winter).

A Professional Approach to Public Relations and Marketing

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Abstract

This paper discusses the interfaces between public relations and interpretation, and between marketing and public relations. It then goes on to treat one subset of public relations--publicity. It stresses the importance of planning and evaluation. It discusses how to develop press contacts and to obtain coverage. It describes the difference between news and feature angles. It deemphasizes form and rules, instead emphasizing the "publicizable moment."

Many public relations discussions emphasize the form and the rules. A press release must have one-inch margins. It must end with -30- or ###. In fact, some of us who are public relations professionals know the real truth of the matter: the form is the least important thing. It is the story, the idea, the angle, the hook, the slant, the spin, that makes it or breaks it. News value, uniqueness of content and creativity of approach are more important than the width of the margin or even the press release itself. Forget the form and the rules and use what works.

The Interface of Public Relations and Interpretation

Many public relations discussions at interpretive conferences talk about public relations as an entity unto itself. In fact, a strong argument can be made that public relations and interpretation are, if not virtually synonymous, at least two disciplines with a wide interface. Interpreters are their agencies' public relations people, even if, as in some of the national parks, there are also public information staff who deal with the press.

Edward Bernays, often called "the father of public relations," defined public relations as "the engineering of consent." Freeman Tilden's definition and principles of interpretation stress education and first-hand experience, both of which can be a component of public relations. Other interpretive works stress the opportunity that interpretation provides to guide visitors through the resource and otherwise manage resources through interpretation. These works also stress that interpretation is a manner by which the visitor comes to know and support the agency managing these resources. Is this not, then, the engineering of consent?

I define public relations a little differently. Imagine that each of the following disciplines or entities was a circle: interpretation, publicity (e.g. press coverage), marketing, advertising, publications (e.g. brochures, books), direct mail (e.g. fliers sent via the mail), fundraising, government relations and so on. Merge these circles in such a way as a portion of each of them intersect and overlap, as in a Venn diagram or the old Reingold beer logo. The area where they merge defines the broad discipline of public relations, or all those activities which in some way influence and impact any or all of an agency's publics.

For the purposes of this discussion, because of the limitations of time/space, we'll examine publicity, one aspect of public relations which people often erroneously consider to be fully synonymous with public relations.

Importance of Planning and Evaluation

Most public relations activities should begin with a planning process and a written plan. Few do. As with good interpretation, it is crucial that you determine what you want to "say" and who you want to "say" it to. That is, what is your message, and who are your publics or audiences?

Another thing public relations activities rarely do is to leave enough time. Start early, at least six months before you want results. Many magazines deadlines are three or four months before publication date.

Finally, evaluate results, both as they do or do not happen, and again afterwards. In the realm of publicity, the most tangible results are the stories that find their way into the media, which can be further evaluated on their number, size, quality, and slant. For publicity campaigns that relate to anything longer than a one-day event, evaluating all this as it happens allows you to modify your efforts to create better results, or play off what you have successfully achieved. And when the campaign is complete and the dust has settled, an evaluational "debriefing," even if only between you and yourself, gives you invaluable insight for the next one.

Developing Press Contacts

All the planning and evaluation will do you no good if you don't know your way around the media you are targeting. For starters, you must study this media. If your targets center around one particular geographical area (e.g. a metropolitan area), read, watch and listen as much as you can. Who sets the media agenda of the area? That is, which medium is the leader who many or all of the others follow. In many cities, this is the biggest (or only) daily morning paper. For example, a story that appears in the New York Times on Monday morning, may be on 10 different radio stations by noon, on three different evening news television programs, and in two other dailies the next morning. Naturally, you want to put extra attention and effort into getting to know the medium that sets this agenda, because your efforts go farther.

Keep track of who writes or speaks about what when, especially in the medium that sets the agenda. Get to know who has "beats" which relate to what you are trying to communicate, but be creative in your analysis. A paper might have an environmental reporter, but if you're sponsoring a maple sugaring festival, the food reporter might be your best contact.

Remember your friendly reference librarian and the biggest corner newsstand. The librarian may have various media directories or press lists which can at least give you a starting point. The newsstand might just carry a paper or magazine you otherwise might not have known about.

Once you've mastered the media, try to get to know reporters and editors personally, and treat them as you would a friend. The Golden Rule applies here. Once you've gotten to know a reporter or editor, don't always contact them with your story, call them up with a nonselfish tip or just for lunch. Acknowledge them when they do a good job. Remember, too, that in the media business, as in all business, who knows whom is a crucial operating principle.

Obtaining Coverage

With all the aforementioned in hand, the key to obtaining coverage is the angle or "peg" of the story you are promoting. There are two broad categories: news and feature or human interest.

When it comes to defining the former, some people rely on the old saw that "news is new." Some examples might be the opening of a new interpretive center, the first sighting of a bird in the state, or the introduction of a new resource management plan. However, I once asked a very wise old reporter at the New York Times how he defined news. He said "I wish I knew," and then on reflection, said that "news is what the editor thinks is news." This, I think is closer to reality than "news is new," meaning that interpretation and who knows whom definitely applies to the news judgment.

The other kind of angle or peg presents far more frequent opportunities in the world of interpretation, yet its definition is even more elusive. The feature or human interest angle is the "good news" story, the offbeat story, the celebrity story. Its concept is best mastered by looking at case histories or by reading, listening, and watching everything the media covers that doesn't seem to be hard news. To be a master of finding a feature peg is to be a master at publicity. In that respect we are talking art, not science.

Look for a story in anything or everything. Capitalize. Think about the interpretive concept of the teachable moment, that opportunity which suddenly presents itself, begging for interpretation. And make that teachable moment a "publicizable moment." Forget the form. Think of ways that you can create publicity without a press release. Perhaps most importantly, acknowledge to yourself that what you are doing as an interpreter is a great and honorable pursuit, worthy of media coverage. And if you love what you promote and interpret, your enthusiasm will be infectious.

Bibliography

Breslav, M. 1987. "A Professional Approach to Public Relations." In: *Proceedings of the General Sessions, 1987 National Interpreters Workshop.* pp. 15-17.

Sharpe, G. W. 1976. *Interpreting the Environment.* John Wiley & Sons.

Tilden, F. 1977. *Interpreting Our Heritage.* University of North Carolina Press.

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Interpreting Arts and Culture for the Park Audience

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Abstract

Every park system has a unique message to convey to the park visitor. Traditionally, we interpret by conveying information to our visitors through static displays, brochures, walks, talks, tours, and campfire programs.

In 1987, the New Mexico State Park and Recreation Division was presented with a unique opportunity for interpretation when a traveler volunteered to work at one of the parks as a campground host in exchange for a campsite. The park manager quickly recognized the volunteer's multifaceted talents as storyteller and interpreter. Thus began a successful program interpreting arts and culture in the parks.

Background

Of all the sources of inspiration which move us to create and cause our curiosity to pique, none has the impact of the outdoors. In the western states, stories of nature, wilderness, wildlife, Indians, cowboys, and the frontier abound. Many parks and recreation areas have been established to preserve and commemorate these stories and ideas (LaPage, Ranney, 1988). In New Mexico, where three cultures have co-existed for over 100 years, the traditions and heritage of the Hispanic and Native American are dominant on the landscape, and in the languages, food, celebrations, and festivals. With these traditions in place, the Anglo arrived on the scene and added to the arena his own unique characteristics. Our parks have capitalized on aspects of all three cultures: Pancho Villa, Billy the Kid, Coronado, miners, cowboys, and Indians.

Studies tell us that many of the people who visit New Mexico do so for the scenery, outdoor recreation, and the experience of seeing the arts and culture of the Native American and Hispanic residents. The State Fair has an Indian Village and a Spanish Village; Santa Fe has an Indian Market, Spanish Market, and rodeo and opera performances. The Santa Fe Fiesta, celebrating the reconquering of Santa Fe by the Spanish in 1644, is the oldest continuously celebrated fiesta in the United States. The tradition of the luminaria on Christmas Eve has spread into other parts of the country as a popular Christmas decoration.

Interpreting Culture

Every park interpreter and naturalist can think of some aspect of culture which could and should be interpreted to park visitors. It may be something specific to the park or something more universal such as the Amish in Pennsylvania or the Eskimo in Alaska. The question is, how do we interpret the intangible of culture? Yorke Edwards, Director of the British Columbia Museum in Victoria, wrote that the very word "interpret" implies a message needing translation. The use of static displays depicting area cultural resources is the most often used method. Edwards contends, however, that this is not interpretation at all, but information. This is often preparation for interpretation since the visitors will use what they have learned to interpret their experiences. Interpretation requires an experience--nothing can equal the accuracy and clarity of experiencing the real thing (Edwards, 1979)!

The effective interpreter communicates in a manner that the audience finds easy to receive and understand. Success is achieved when the audience is attracted, held, and informed. In 1987 the New Mexico State Park and Recreation Division hired a young man to do interpretation. His job was two fold--to interpret culture to the park audience through the art of storytelling and to counsel park staff on how they could better interpret the parks. He is a native of Canada, an Algonguin--a member of a tribe far removed from the Native Americans of the desert Southwest. Yet, he is the real thing that Edwards talks about. He interprets in native costume, his teepee erected for the children to see. He talks with visitors while he makes arrowheads, inviting them back for the evening campfire program. The visitors are drawn to him; one said, "I had to go hear him, I don't know why." He holds audiences spellbound for over an hour--all ages, all cultures. Not only does he impart to his audience a sense of the past, but he passes on his stories to new generations who will remember them as a part of their park experience.

Interpreting the Arts

The arts are traditionally interpreted to the park visitor in display cases--behind glass, out of reach, out of touch, and possibly out of understanding. While we understand the need and value of preservation, art is living, not static, and the need exists for better ways to interpret. One way is living history which includes the chance to watch the weaver, blacksmith, or potter in action, conveying their skills and talents to the visitor. Another technique that has been used successfully is "arts in the park" programs. The artist creates for the visitor, but also allows the visitor a hands-on experience--touching the clay or the wool, trying the shuttle on the loom, feeling the heat of the blacksmith's fire, or trying out the primitive plow. Thus, the visitor "experiences" the hardship and difficulties of the pioneer, not merely reads about them.

Conclusion

As interpreters we could say that one of our purposes and goals is to preserve and perpetuate our heritage. Parks are areas where a myriad of visitors pass every day. They come from many backgrounds, with many preconceived ideas, misconceptions, prejudices. Interpreting arts and cultures prevalent to the area offers the park management an opportunity to educate through experience and entertainment.

Bibliography

Danton, T. 1979. Heritage, a New Meaning for Interpreters. *In Touch*, Fall.

Edwards, Y. 1980. Interpretation--What Should It Be? *In Touch*, Winter.

LaPage, W. F., Ranney, S. R. 1988. *America's Wilderness: The Heart and Soul of Culture.* Parks and Recreation. July.

The Original Interpreter. 1973-1974. *The Interpreter.* Winter.

Washburn, R. F., Wagar, J. A. 1971. *Evaluating Interpretation of Natural and Historic Resources from Visitor Response to Exhibit Content.* U.S.D.A. Forest Service.

Effects of the Direction of Door Opening and Visitor Flow Patterns

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Abstract

We measured directional preferences in the flow pattern of visitors inside 19th-Century village structures at Old Washington Historic State Park. We recorded flow patterns to the right or to the left as a function of gender, handedness, and direction in which the entrance door opened. Results indicate that the direction the door opens into a room affects the flow pattern of the visitor. Of the visitors who entered a room through a door which opened to the left, 85 percent turned to the right. However, where the door opened to the right, 59 percent turned to the left. This leftward flow is contrary to the flow pattern traditionally expected in museums. Results have strong implications for museum design specifically the effective placement and interpretation of exhibits in historic houses and other structures. The traditional right-hand orientation of museum exhibits may need to be reevaluated.

Introduction

The directional preference in the flow pattern of visitors has important significance for the placement and interpretation of an exhibit. The effective legibility of an exhibit depends upon the flow of the visitors corresponding with the layout and sequencing of the exhibit. Most effective exhibits are arranged so that the materials and explanations are viewed in a logical sequence. For the exhibits to be "read" properly, the visitor flow pattern must match the intended design. If the visitor flow pattern lies in opposition to the interpretation of the exhibit, the visitor may become confused by the apparently illogical sequence of explanations and supporting materials. It's important, therefore, that the arrangement of exhibits matched the natural flow pattern of the visitors.

Most of the available research on visitor flow patterns has been based on studies in large museum settings where entrances to galleries and halls were relatively broad, at least compared to 19th-Century dwellings, and where doorways were unhampered by doors which needed to be opened and shut.

Studies conducted earlier in this century reported that there was a strong tendency for museum visitors to turn to the right. This trait was believed to be so strong that left walls were considered inferior to right walls for exhibit placement (Robinson, 1931). Melton (1935) found that approximately 75 percent of visitors turn to the right when entering a gallery, but qualified this finding by adding that environmental factors favoring a right or left turn needed to be equal to make this result significant.

More recently, Alexander (1979) stated that exhibits placed to the left of an entrance were likely to be ignored due to the tendency of visitors to turn right. Belief in the tendency to turn to the right is widely held and long established. We don't know the reason for this directional preference.

This study was designed to determine what factors affect the directional flow of visitors in historic houses and other structures. The effects of handedness, gender, and the direction in which the door opens into a room upon the flow patterns of visitors were tested. It was hypothesized that the direction in which the door opens into a room would affect the subsequent flow patterns of visitors.

Method

Adults touring Old Washington Historic State Park in March 1988 served as subjects for this study. We collected samples at ten-day intervals throughout the month. Days sampled included Mondays, Wednesdays, and Sundays.

The subjects entered either the State Confederate Capitol or the 1845 Sanders House. These two structures were chosen because they both met the following criteria: 1) they have single entrance doors, 2) the doors swing open to the inside, and 3) the exhibits on the right and left sides of the doors were considered to be equal in attraction value.

We conducted tours for the day at the assigned building where the door opened either to the right (Sanders) or to the left (Capitol). Visitors were greeted by the experimenter/docent, but no verbal or nonverbal directional cues were given to visitors. We recorded the direction selected by the visitor to the right or to the left. We noted gender. We determined handedness by a learning-assessment questionnaire administered at the conclusion of the tour. Questionnaires were attached to clipboards, and we observed handedness as visitors circled answers.

Groups of visitors were viewed as a unit, with only the first person choosing a direction serving as the subject. Visitors entering the room while a tour was in progress did not serve as subjects since their direction could have been influenced by the group already in the room.

Results

Of the 60 subjects, 65 percent turned to the right and 35 percent turned to the left. Females made up 60 percent of the subjects and 40 percent were males. Right-handed individuals made up 97 percent of the study group, while three percent were left handed. Approximately equal numbers of subjects were studied at the two tour buildings.

Neither gender nor handedness appeared to have any effect on the flow patterns selected by the visitors. The great majority of visitors were right-handed. Although the effects of handedness are often cited as the cause for visitors' directional preferences, this study found that right-handed individuals frequently selected a leftward flow.

Of the subjects who entered a room through a door swinging open to the left (n=33), 85 percent turned to the right. However, where the door opened to the right (n=27), 59 percent turned to the left (See Figure 1). A contingency table analysis testing the independence of the door opening to the left or right and the flow pattern of the visitor to the left or right indicated dependence with an observed significance level of .0004.

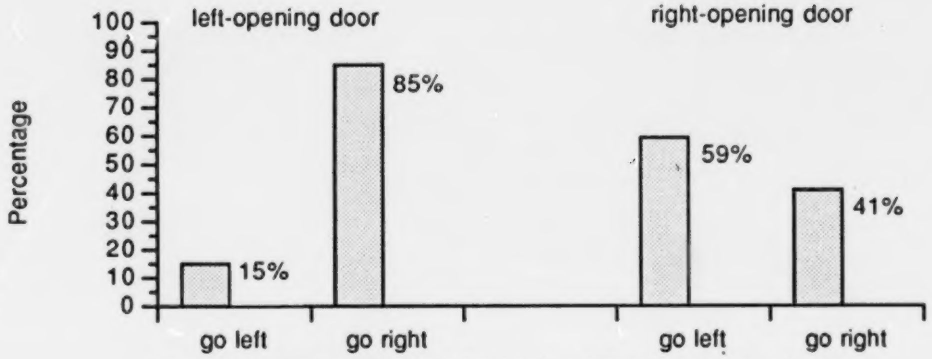

Figure 1. Percentages of visitors going left or right after entering.

Discussion

There is a considerable difference between Melton's finding that approximately 75 percent of visitors use a right-oriented flow pattern and the findings of this study. Data gathered by this study indicate an average directional preference of only 65 percent for the right. When this is examined in light of the direction in which the door opens, there is an even greater difference. In the case where a door opens to the right, only 41 percent (far fewer people than the traditionally accepted 75 percent would suggest) turned to the right. When the door opens to the left, 85 percent (even more than the expected 75 percent of the people) turn and flow to the right. The direction in which a door opens into a room appears to be a very significant factor affecting the subsequent directional flow pattern of visitors.

These findings have strong implications for the effective placement and interpretation of exhibits in historic houses and other structures. Many exhibits are set up with the presumption of a traditional right-hand orientation flow pattern. If the entrance door opens to the left, the study shows that the visitor will have a natural tendency to flow to the right, thus creating a legible design. But if the door opens to the right, the majority of the visitors will have a tendency to flow to the left, and they will not be able to fully comprehend a display if it has been set up with a right-hand orientation. If an exhibit which is the intended focal point of a room or starting point for a display lies in the opposite direction from the natural flow of the visitors, the exhibit will lose its impact and the visitors will become disoriented.

Directional control devices aid in routing the flow pattern in a desired direction. De Borhegyi (1965) used a deflector exhibit at hall entrances to route traffic to the left. This arrangement facilitates a smooth flow since exhibit labels are read from left to right. In view of the observation of the Royal Ontario Museum Communication Design Team (1976) that visitors read labels more easily if they move across the face of the exhibit from left to right, it might be thought best to engineer exhibits to promote a left-to-right flow.

This study suggests that a left-to-right flow would be facilitated by having visitors enter the exhibit area through a door which opens to the right. The door would serve the same purpose as De Borhegyi's deflector case. According to his study, such an arrangement and flow pattern would increase the amount of label reading and information retention.

Museums have long recognized that they have the dual purposes of educating and entertaining visitors. It's time to recognize that doors also have dual purposes. We have always known that doors permit access. We found in this study that doors also guide. This previously unrecognized guiding function of doors could be used by museums to maximize the learning potential in a pleasurable atmosphere.

Doors should not lead visitors astray by directing them to view exhibits in a confusing or disorderly manner. Exhibits should be arranged to meet the natural flow of visitors, and this route will vary depending on the direction the door opens. Routing visitors to the left through a right-opening door reinforces the natural flow pattern and increases exhibit legibility. When an exhibit layout and sequence corresponds with the natural flow of visitors the visitors' experiences will be enhanced increasing both learning and pleasure.

Bibliography

Alexander, E. P. 1979. *Museums in Motion.* American Association for State and Local History. Nashville, TN.

De Borhegyi, S. F. 1965. Testing Audience Reaction to Museum Exhibits. *Curator.* 8, 86-94.

Melton, A. W. 1935. Problems of Installation in Museums of Art. *AAM Monograph,* New Series, No. 14. American Association of Museums. Washington, DC.

Robinson, E. S. 1931. Exit the Typical Visitor. *Journal of Adult Education,* 3/4, 418-423.

Royal Ontario Museum 1976. *Communicating with the Museum Visitor: Guidelines for Planning.* Communications Design Team of the Royal Ontario Museum. Toronto, Canada.

Assessing Your Agency's Image:
The Perspective Given to the Public through Public Relations Material

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Abstract

Every administrator, program planner, and interpreter faces the challenge of producing supporting program material. But what collective "image" do these materials convey to the public? One needs to be aware of the "image" or "attitude" to make sure that it's consistent with the agency's or organization's philosophy and goals. Each item, be it an activity, participant, animal, or environment depicted in the material should be selected for a purpose. Content analysis is an approach to documentary research involving archive material such as brochures, posters, exhibits, films, and other forms of communication. It's the systematic counting, assessing, and interpreting of the form and substance of communication. Methods and results from several data sets will be examined as examples to illustrate how content analysis can be used to determine if the material actually contains the desired or planned for message.

Introduction

Every interpretive program has been associated with some sort of informational and/or promotional material. The form might have been annual reports, advertising brochures, special event posters, news releases for the media, a radio program, a video tape, etc. These items can be both expensive and time consumptive, therefore it is imperative that the right message be conveyed in the most comprehensible manner. Program administrators should determine what type of "image" is actually being presented through such public relations material. The resulting image should be consistent with the program's goals and objectives. Publicly supported programs are expected to consider equal gender representation, avoidance of sex role stereotyping and other "isms" (ageism, racism), appropriate seasonal representation, activity/passivity balance, indoor/outdoor contrasts, and representation of participants and staff. The desired image or message might accidently occur, but it's usually the result of advance planning. For example, photographs of participants could reflect current user data, actual demographics, or desired user patterns. Too often however, the person responsible for photograph selection is unaware of the program's philosophy and is affected primarily by factors of availability, visual appeal, or emotional impact.

Much has been written about program development and evaluation. Yet, very little has been done in the area of public relations' material assessment. How does one determine what type of image is actually being presented? A research method called Content Analysis can be used for the "systematic counting, assessing, and interpreting of the form and substance of communication" (Manheim and Rich, 1981:155). Shifts in perspectives on energy (Frankener 1980), environmental messages of *Audubon* and the *Sierra Club Bulletin,* the evolution of environmental education (Tanner, 1984-85), and wildlife references in children's literature (More, 1977) have been investigated by content analysis.

Many people are attracted each year to West Virginia State Parks and Forests to view the abundant wildlife--especially the deer that appear around the edges of the golf courses that are near the lodges. But a photographic content analysis of State Park and Forest brochures indicated that only 1.1 percent contained any wildlife--not an "image" of abundant, easily viewed wildlife (Burrus-Bammel et al., 1985b). The recommendation was made that for the next printing more wildlife photographs be included in the brochures. Content analysis is a method that can determine if an organization's goals and objectives are consistent with the "image" presented to the public through brochures, posters, and other forms of public relations materials.

Methods

Five steps are necessary in conducting content analysis research:

1) Defining the population to be studied.
2) Determining the sample.
3) Isolating the unit of analysis.
4) Encoding the data--frequency tallies.
5) Conducting the statistical analysis.

These steps will be explained using as an example a West Virginia State Park brochure study and results from several other descriptive studies conducted by a research team at West Virginia University. We wanted to know how the State Park Brochures had handled certain subjects, such as types of visitors and wildlife, and how these subjects had been altered, if any, over the last several printings. Follow-up would include an analysis of the changes and recommendations for the next printing.

Defining the Population

In this case the population was obvious--it had to be West Virginia State Park brochures. In another study, the population may not be so obvious. Perhaps the research problem is to ascertain the "image" associated with a specific organization such as Green Peace or with a local nature center, Horseshoe Bend. The population selected might be a local newspaper, TV news programs, or any magazine or radio station. It could also be annual reports, films, or any self-generated public relations material produced by the organization or nature center. The population could also be drawn from any form of archive material including visitor comments in guest books, letters received, attendance records, maintenance records, etc.

Determining the Sample

Twenty-seven West Virginia State Park brochures were located which represented nine state parks from three different time periods. Set 1 contained those published from April 1972 to April 1975, Set 2 had publication dates ranging from July 1978 to May 1984, and the brochures in Set 3 were published in January 1988. All of these were used since the numbers were manageable. In many cases however, the determined population will be too large and an appropriate sample size will have to be selected. If one wanted to investigate the coverage given nonconsumptive vs. consumptive stores in the newspaper over the past 40 years, a sampling method would be advisable.

Isolating the Unit of Analysis

The major unit of analysis selected for this study was photographs, although maps, drawings, and other illustrations such as logos were included. A tally sheet of 47 categories has been developed over several project (Bartlett et al., 1986; Burrus-Bammel et al., 1985a; Burrus-Bammel et al., 1985b) to record the content of each photograph under major subdivisions of environment (natural, natural modified, and artificial), people (gender, age, group composition, dominance and recessive, minority, handicapped, etc.), activities (swimming, hiking, camping, etc.), animals/wildlife, and picture clarity.

In a previous study of 91 National Forests brochures (Burrus-Bammel et al., 1988), eight categories of syntactical units of analysis were included: references to people (i.e. nonsexist or sexist language), readability level, motivations for visiting, activities mentioned, subject matter of subtitles, publication dates, the nondiscriminatory clause, and the multiple-use philosophy. Most content-analysis studies have been far less ambitious, in fact many have used only one unit of analysis. Such a study could use program titles offered at environmental centers to determine content, inches of newspaper columns could be used to determine coverage of natural resource related issues vs. other issues.

The possibilities for units of analysis are limitless. Units in any printed material could include but not be limited to length of article (column inches, pages), placement of article (feature, continuous coverage vs. continued on later pages), print size, type style, title placement (centered, left justified, diagonal, etc.), author affiliation, author gender, number of authors, type of paper, color of paper, number and type of illustrations, and of course content. Units of analysis for projected material such as movies and videos could include length, frequency, theme, gender of narrator, characteristics of people, environment (where, season of year, type), wildlife, flora, purpose, emotional level, intended audience, sponsors, and educational level of content.

Encoding the Data

This part of the study involves establishing categories for each unit of analysis and then completing a frequency tally. In this study, the type of environment shown in each photograph was classified as either artificial, modified natural, or natural. Pictures tallied as artificial were ones which emphasized a structure such as a lodge or were an interior shot of some structure. State park brochures frequently contain photographs of lodge rooms and dining areas. The modified natural category would include photographs of golf courses, boat launches, and other outdoor scenes that contain nonnatural elements such as ski lifts, developed campgrounds, playgrounds, or groomed cross country trails. Photographs classified as natural can contain people, but not any evidence of environmental changes caused by humans.

Once categories are established for each unit of analysis a "check" sheet should be established so that later the tallies can be easily added and frequencies established. Each category can be a row and each column can be a given photograph. The last row and column can be designated as a place to indicate totals. Each photograph should be assigned a number and this number placed both near the photograph and as a title on the check sheet column. Then at any time, one can easily match the photograph column to the actual photograph. We have also found that a collection of "example" photographs for the various categories can be very useful, especially when training new encoders or presenting research results (using slides of those photographs) to various audiences.

Conducting the Statistical Analysis

There are those who fear research and don't get involved in any projects because of the statistical aspects. Part of the beauty of content analysis is that much of the statistical analysis can be limited to calculating percentages, especially in descriptive studies such as this one. One can use various standard tests to determine if the actual results are significantly different from those expected or those that are found in the real world. For example, is there a significant difference if 70 percent of a nature center's programs are conducted outside yet only 45 percent of the photographs depicting programs were shot outside? A similar procedure could be done to determine if the differences from one year to another are significantly different.

Results and Implications

Brochures from nine West Virginia State Parks were located that represented three different time periods, Set 1 April 1972 to April 1975, Set 2 July 1978 to May 1984, and Set 3 January 1988. A total of 287 photographs were analyzed, 80 in Set 1, 112 in Set 2, and 95 in Set 3. The main point to keep in mind for each category is that a decision should have been made before production to guide selection, so that the desired impression would be achieved. There can be three planned strategies for visitor representation in the material selection process:

1) Potential visitors based on actual population demographics
2) Actual visitors based on historical user data
3) Desired visitors

Four example categories will be discussed to demonstrate the type of results that can be obtained from content analysis.

Photographs, Types of Environments

During this study's time period, about 16 years, the allocation of photographs to each environmental category changed between 11 and 17 percent. The greatest change occurred in the Natural category with an increase in the three Sets from 6 percent to

10 percent to 23 percent. Both Artificial and Natural-modified categories decreased between the first and third set (Figure 1). These differences might have been accidental but more likely due to the State's slogan of "Wild, Wonderful" and a desire to point out the unique aspects of the parks.

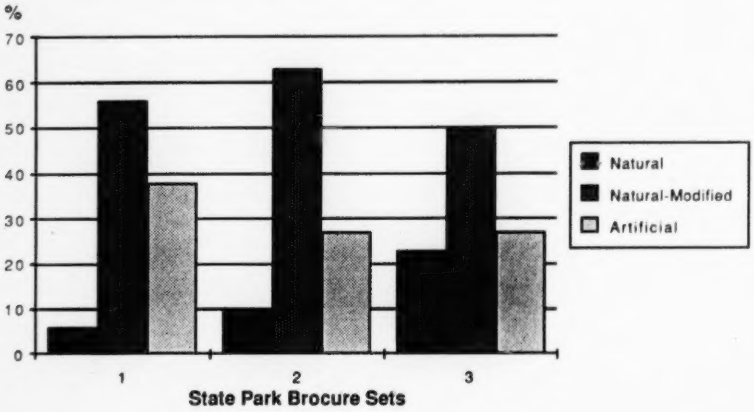

Figure 1. Percent Allocations in the Photographic "Environmental" Category for the Three Sets of West Virginia State Park Brochures, 1972-1988.

Frequency or number of photographs in each category is one way to measure representation. Relative importance or representation can also be measured by total square inches and average photograph size. In the National Forest brochure study (Burrus-Bammel et al., 1988), all three measurements indicated that greater emphasis had been placed on the natural environment (Table 1).

Table 1. Three Photographic Measurements of Environmental Representation for 91 National Forest brochures, 1986.

Environmental Category	Frequency	Total Sq. Inches	Average Size Sq. Inches
Natural	203	2542.30	12.13
Natural-Modified	137	1559.38	11.24
Artificial	36	485.03	9.54

Another environmental classification could include seasons for outdoor photographs. If an interpretive center or program is open to the public year around, then it follows that material from that program should reflect that availability. Six percent of all the National Forest photographs reflected seasonal variation (snow, fall leaf coloration, bare branches) from spring/summer (Burrus-Bammel et al., 1988). Part of this may be because more pictures are taken and available for spring/summer. Material developers could check photo files and if that's the case, they might give their photographer a fall and winter assignment or maybe have photo contests for those seasons.

Photographs, With and Without People

A dramatic change was noted when the number of photographs, with and without people were tallied. The trend from Set 1 to Set 3 was for the percent of photographs containing people to decrease from 70 percent to 44 percent and the percent of photographs without people to increase from 30 percent to 56 percent (Figure 2).

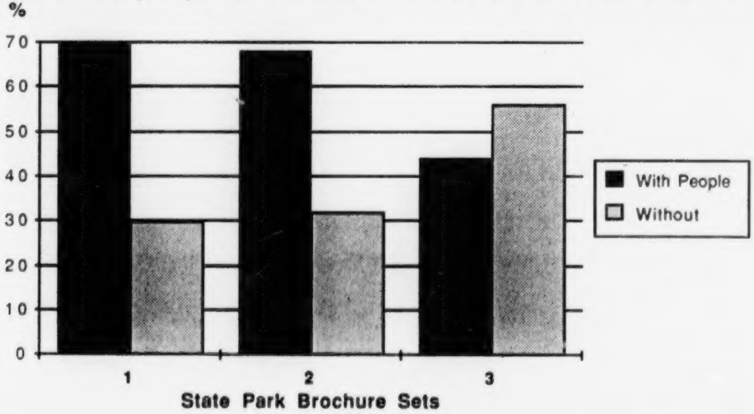

Figure 2. Percent Allocations in the Photographic "With and Without People" Category for the Three Sets of West Virginia State Park Brochures, 1972-1988.

Photographs of Handicapped and Minorities

Only one photograph, out of the 287 in the 27 brochures, contained a visibly handicapped individual. A blind female skier was shown in Set 2. In that same brochure the only nonwhite person was also located, an Oriental male. We don't believe that every brochure for each state park must have the same balance of representation because each park has its own unique aspects, but overall some sort of appropriate balance should be achieved. It seems that no matter what the basis for one's strategy (actual users, population demographics, desired users) that material for public areas should contain more than .003 percent photographs of minorities and the handicapped.

These findings on handicapped and minorities were not due, as some might suspect, to a limited data set. We have found similar results in all data sets. Only two photographs, out of the 195 containing people, in a set of 91 National Forest brochures (Burrus-Bammel et al., 1988) showed an individual who could be classified as a member of a minority group. Six percent of the 195 photographs contained handicapped individuals but 7 of those 9 photographs were in one brochure. In another state park study (Burrus-Bammel et al., 1985b), only one handicapped and only one minority person could be located in the 108 pictures containing people. No minority or handicapped individuals were located in a study on white water rafting brochures (Bartlett et al., 1986).

A factor to consider when selecting photographs of handicapped individuals is gender. Both formal and informal investigation has led us to believe that a disproportionate percentage of handicapped photographs contain women, especially when the number of men to women in photographs is taken into consideration (next category to be discussed). The one handicapped person in the previously mentioned state park study was a female and 71.4 percent of the handicapped in a study of the *Parks and Recreation* journal were female (Burrus-Bammel et al., 1985a).

Photographs of Men and Women

In all data sets that we have analyzed, photographs containing men have always outnumbered those containing women. Men in the National Park brochures (Burrus-Bammel et al., 1988) appeared in 26 percent more of the photographs containing people than did women. In the *Parks and Recreation* journal study (Burrus-Bammel et al., 1985a), 75.5 percent of the photographs in the 1982 issues sampled emphasized or contained only men. Men in the rafting study represented 68 percent of the people (Bartlett et al., 1986). Once again, men outnumbered women in all three of the State Park Sets with the greatest difference in Set 2 where 113 men and 78 women were shown.

Representation of gender, minorities, the elderly, and the handicapped in terms of frequency is a major concern, but equally important is the assigned roles and the relationship between individuals--is there dominance indicated? For example, is one type of individual (white/male/teenager/healthy) large and in the foreground and the other consistently in the background? Or is one gender obviously in a position of authority or power and the other in a submissive or secondary role? Administrators, teachers, life guards, group or family leaders are usually depicted as male. Women were only found more frequently than men in the *Parks and Recreation* journal in the categories of "followers," "handicapped," "at picnic tables," and "selling with sex." Once again the issue of representation should be decided on the basis of some predetermined basis. If all the interpreters at a given center have historically been men, then obviously all of the interpreters pictured should reflect that. But how will the participants be depicted in terms of gender and activities? Men and women in the National Park brochure study were shown with quite different activity patterns. Fewer than 9 percent of the fishing and boating pictures contained females.

A similar breakdown should be considered for the elderly as a group and with gender subgroups. Generally this age group is underrepresented and, when present, is shown in primarily passive activities like sitting and eating.

Photographs of Animals

Horses and deer were the only two animals depicted in the three State Park brochure sets and the horses represented commercial stables with string trail riding. Deer were the only "wild" animal shown (Figure 3). In the other State Park brochure study (Burrus-Bammel et al., 1985b), 2.7 percent or 5 of the 180 pictures contained animals, 3 of horses, 1 of deer, and 1 of a raccoon. This isn't representative of the available wildlife and the lure of animals has proven to be an attraction. Lime and Cushwa (1969) reported that 96 percent of all campers interviewed indicated that the opportunity to see wildlife in its natural setting added to their outdoor experience. Printed material from nature centers should certainly reflect their wildlife involvement.

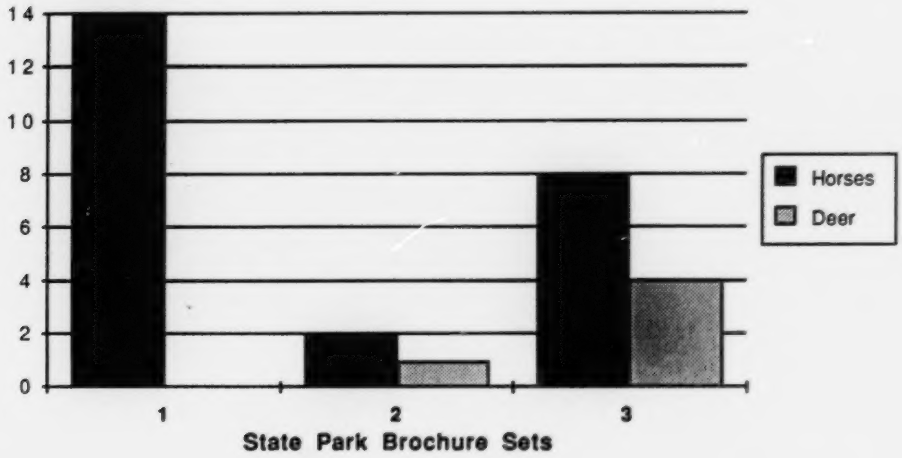

Figure 3. Frequency of Animals in the Photographic "Wildlife" Category for the Three Sets of West Virginia State Park Brochures, 1972-1988.

Maps

Five brochures in Set 1 contained maps to assist in the location of the park, the other four only named the nearest town. All nine brochures in Set 2 contained detailed maps and this trend was maintained in Set 3. West Virginia, like most states, has travel and tourism as one of its top three industries. A map would seem essential to make travel more pleasant, especially for the first-time user. A map could serve the same purpose in a nature center's brochure or poster of a future event. The user might have a map of the park but not be aware of the center's location within the park. Such assistance could make a difference in the user's overall experience. Printing is expensive and that makes unused white space costly. An administrator could have a map drawn once or locate an existing one, and it could be reduced or enlarged as necessary for each project.

Summary

Periodically, especially before planning a new printing, content analysis should be conducted on public relations material to make sure that the desired philosophy and image is being conveyed. It might be helpful to develop basic guidelines that all materials could follow. These guidelines would need to include the issues of representativeness of people, wildlife, environments, and activities. For example, should visitors in photographs reflect current user statistics, population demographics, or desired patterns. Decisions would also need to be made about acceptable reading levels, minimum number of photographs, seasonal photograph representation, and graphic aspects of paper, lettering, placement, color, etc. It might also be helpful to have a designated person give final approval for all public relations material.

Bibliography

Bartlett, D., S. Femmel, G. Bammel, L. Burrus-Bammel. 1986. A Content Analysis of White Water Rafting Brochures. *Proceedings New River Symposium*: Wythville, VA. 67-76 p.

Burrus-Bammel, L.L., G. Bammel, and L. Angotti. 1985a. Assessing an Agency: Sexism and Beyond. *Women In Forestry.* 7(2): 21-22.

Burrus-Bammel, L.L., G. Bammel, K. Kopitsky, L. Angotti and K. Faulkner. 1985b. A Photographic Content Analysis Technique of Measuring Attitudes Toward the Environment. *Proceedings 1985 North American Association for Environmental Education Conference:* Washington, D.C. 373-377 pp.

Burrus-Bammel, L.L., G. Bammel, and K. Kopitsky. 1988. Content Analysis: A Technique for Measuring Attitudes Expressed in Environmental Education Literature. *Journal of Environmental Education.* (forthcoming).

Frankener, F. 1980. Evidence of a Shift in the Social Science Perspective on Energy: A Content Analysis of "GeoAbstracts, Part C: Economic Geography," 1966-78. *Journal of Environmental Education.* 12(1): 40-44.

Lime, D.W. and C.T. Cushwa. 1969. *Wildlife Esthetics and Auto Campers in the Superior National Forest.* USDA-FS Research Paper NC-32. North Central Forest and Range Experiment Station, St. Paul, Minnesota.

Manheim, J. and R. Rich. 1981. *Empirical Political Analysis: Research Methods in Political Science.* Englewood Cliffs: Prentice-Hall.

More, T. 1977. *An Analysis of Wildlife in Children's Stories.* USDA-FS Technical Report NE-30. Proceedings of the Symposium Fair, George Washington University, Washington, D.C.

Tanner, T. 1984-85. The Evaluation of Environmental Education as Inferred from Citation Analysis. *Journal of Environmental Education.* 16(2):20-29.

Interpretive Planning for Regional Visitor Experiences: A Concept Whose Time Has Come

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Abstract

This paper stresses the need for detailed systems interpretive planning when creating an interpretive plan. Special emphasis is given to interagency cooperation within regions to avoid jumbled and similar programs.

Introduction

A vital component of any directed, successful visitor services program is the need for a detailed systems interpretive plan. However, interpretive planning in many regions today still remains largely misunderstood and ignored by many agencies responsible for interpretive services. It is often characterized by the following:

- A bewildering and confusing array of methodologies, many of which remain outdated but used mainly for the purposes of tradition, rather than their effectiveness or ease of understanding.
- A strict agency perspective with little regard to neighboring resource sites which may directly relate thematically.
- Being ignored or pushed aside by managers in favor of a strong programming emphasis. In many instances, it would appear that high-level agency administrators are more interested in maximum site (or overall agency) programming data than being concerned whether program objectives are being met, or whether the program reflects the particular site resources. In addition, because many site interpreter staff levels are relatively "thin," planning tends to unfortunately be placed low on the priority list of responsibilities.

The lack of proper attention to the need and value of interpretive planning often results in poor programming, but also affects the interpreter, resource management, and the visitor. As Cherem (1979) states, "this piecemeal approach can result in such a jumbled and overlapping array of offerings, that it is a wonder the visitor takes away anything at all from his regional interpretive experience. As a result, key linkages between themes and subthemes are seldom made." There is a need for better coordination between agencies in planning the visitor experience on a regional basis, rather than agencies continuing to "do their own thing" in a somewhat isolated vacuum. Each resource area is unique, and some themes are better represented in certain areas than others.

What Is the Systems Approach?

The regional, systems approach is "simply a way of thinking about the total system and its components" (Systems Planning Group, Alberta Provincial Parks, 1977). Planners at each park or site within an agency would consider the stories, themes, and facilities at other parks or sites within and outside the administrative and geographical boundaries of that agency. This would result in more economical resource use, more effective message presentation, and provide a more complete understanding of the central themes for visitors who may visit more than one park or site within a given region. Visitors may be encouraged to visit other parks or sites in the region to "complete the story" they began at one park or site within the area covered by the scope of the interpretive systems plan (Traweek, et. al., 1979).

Value of Regional Interpretive Planning

The value of undertaking interagency interpretive planning on a regional basis is substantial and well worth the effort. "The following are but a few of the potential advantages associated with the systems approach:

- It integrates related facilities, themes, and stories within an agency or with several agencies.
- It facilitates the use of natural, physiographic, historical, and cultural resources and stories which might otherwise be ignored or overlooked.
- It makes evaluating interpretive plans and programs easier and more meaningful by pointing out excessive duplication and omissions within the interpretive system (Traweek, et. al., 1979)."

Fortunately, in the past few years, the concept of regional systems planning for interpretation has been advanced by a few agencies and individuals. The following represents a sample of some of these noteworthy achievements.

- Establishing regional-based interagency committees focusing on information exchange, interpretation, and educational activities in the states of Minnesota, Michigan, and Illinois.
- Completing a Biocultural Systems Plan for the Minnesota State Parks System.
- Completing the first systems plans for Metro Parks, Columbus and Franklin County, Ohio, in 1984, and the Illinois and Michigan Canal National Heritage Corridor in Joliet, Illinois in 1988.
- Integrating interpretive activities into regional tourism plans and activities such has been done very successfully in Rochester, New York, for several years in the state of Hawaii through the "Interpret Hawaii Project," and now along the riverfront in Minneapolis, Minnesota.

- Developing systems-oriented interpretive field studies and planning courses at such universities as Ohio State, Winona State, and the University of Alberta, Canada.

Regional Planning and Recent U.S. Federal Legislation

Recent federal legislation for certain units of the National Park System has not only facilitated, but mandated the necessity for, interagency cooperation in interpretive planning efforts. A linear corridor in Illinois highlights the uniqueness of this relatively new legislation. On August 24, 1984, Public Law 98-398, the "Illinois & Michigan Canal National Heritage Corridor Act of 1984" took effect. This legislation cited that there was an abundance of sites and structures within a 95-mile linear corridor stretching from Chicago, Illinois to LaSalle-Peru, Illinois.

The purpose of this title was to retain, enhance, and interpret the cultural, historical, natural, recreational, and economic resources of the corridor where feasible, consistent with industrial and economic growth. A 20-plus member Commission was established on a fixed term to carry out the duties of Public Law 98-398 and to encourage voluntary cooperation and coordination between the federal government, the state, political subdivisions of the state, and nonprofit organizations with respect to ongoing interpretive services in the Corridor.

Impact of Legislation on Interpretive Services Planning

Since the National Park Service and the I & M Canal National Heritage Corridor Commission didn't bestow any landownership responsibility in the Act, it has created a situation where this corridor and its multitude of federal, state, county, city, private, and nonprofit agencies/organizations must cooperate with each other in interpretive planning, site planning and development, and programming efforts. The process of using a regional, interagency approach to planning visitor experiences in the Corridor has been very successful. Each organization has an equal opportunity in decision making, and the interpretive activities for each site best represent those themes that are representative of each individual site within the system. A formal, interagency committee is charged with the responsibility of coordinating current and future interpretive developments and appears to be working quite efficiently.

Toward a Global Approach in Interpretive Planning

The previously cited regional systems interpretive plans, in addition to evolving interagency advancements clearly demonstrates that in preparing ourselves for 1988 and beyond, the regional approach to planning does work effectively and should be seriously considered by all agencies as the standard approach to interpretive planning. Developing regional interpretive experiences can and does work successfully if agencies take the initiative and allow the process to occur in a supportive and uninhibited climate. Just as it's no longer appropriate to hire interpreters who begrudgingly communicate with visitors, no longer is it appropriate for agencies to reluctantly work with sister agencies in interpretive planning activities.

The "yoke" of the territorial imperative must be lifted off the backs of agencies by sensitive and enlightened managers who can appreciate the benefits of planning interpretive services on a regional scale, not the traditional site-only basis. The limited but growing success in the United States and Canada in employing this concept bodes well for expansion of the regional systems approach on a global scale. Any country contemplating interpretive planning should seriously consider employing a regional, systems approach.

As Cherem (1979) states, "the need for regional organization and balance in our interpretive offerings has never been more apparent. Further, those who travel to another region will become less and less tolerant of noncoherent and overlapping interpretive experiences." Interpretive planning for coordinated and balanced regional visitor experiences not only makes sense from an operational and financial accountability standpoint, but the process is truly an approach "whose time has come."

Bibliography

Capelle, Alan D., 1985. *Interpretive Field Studies: Agent for Interagency Cooperation and Coordination.* First World Congress on Heritage Interpretation & Presentation, Banff, Alberta, Canada.

Capelle, Alan D., 1986. *Improving Professional Productivity through Regional Interagency Coordination.* Developing Human Potential in Natural Resources Conference, Tennessee Valley Authority, LBL, Golden Pond, Kentucky.

Cherem, Gabriel J., 1979. *Regional Interpretation Systems.* WIA Journal.

Moore, Gary R. and John A. Veverka, 1987. *An Interpretive Systems Master Plan: A Working Plan for Interpretive System Managers.* AIN/WIA National Interpreter's Workshop, St. Louis, MO, pp 109-114.

Traweek, David E. and John A. Veverka, 1979. *A Systems Approach to Interpretive Planning.* J. of Interp., Assoc. of Interp. Nat. Derwood, Maryland.

The Importance of Interpreting Wilderness Management Policies to Visitors

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Abstract

Poor interpretation of wilderness management policies often leads to negative behavior and criticism of the policy by the resource users. Controls used to correct the negative behavior often create further misunderstanding which leads to more negative attitude toward policy--thus continuing a cycle begun by the initial lack of interpretation.

A study using the student population of Stephen F. Austin State University tested the hypothesis that knowledge of wilderness management and opinions concerning wilderness were related. A pretest given to students revealed a general lack of understanding the dynamic nature of wilderness ecosystems and opinions were based on limited knowledge and misinformation. A written interpretive paper on wilderness management was read by students after the pretest. A later posttest revealed pretested students showed significant changes in both knowledge and opinion toward management policies. Conclusions recommended the use of pretests to precondition users before interpretive programs and use of programs directed at particular issues will increase knowledge of the issue and resulting opinions will move toward favoring good management practices.

Introduction

Why is it so important for management policy in wilderness areas to be understood by the user? The problem which develops as the result of lack of education can be thought of as a cycle. The cycle begins with poor comprehension of reasoning behind management policy creating unsupportive attitudes. Unsupportive attitudes are followed by public criticism and negative behavior. This negative behavior, in turn, forces the manager to attempt control measures, leading to even more misunderstanding and creating more negative public sentiment--thus continues the cycle initially begun by lack of education. If this cycle is to be broken, getting information to the user is the key.

Any business owner (and management of wilderness in many ways can be considered a business) which deals with the public knows the importance of communication. Wilderness managers deal with the public on a daily basis. The difference between normal businessmen and wilderness managers is the wilderness manager deals not only with the on-hand resource but with the resource of the future. Managers of the wilderness resource, in fact any natural resource manager, must recognize it's critical to educate the public of the purpose behind their policy.

Caldwell (1970), in his paper *Environment and the Shaping of Civilization*, wrote:

> "Purposeful shaping of the environment involves purposeful shaping of outlooks on life. The quality of the future environment depends, therefore, upon the shaping of attitudes, beliefs, and values through present education" (p. 254).

It's the task of the natural resource manager to furnish primary information on their policies and procedures to the public.

This can make a difference! Here is an example. In the fall of 1985, a pretest/posttest survey was conducted using students attending Stephen F. Austin State University. The objectives of the study were to determine the knowledge and opinions of university students concerning wilderness management policies of the U.S. Forest Service, and to determine the extent of, and the relationship between, the change in knowledge and opinion that followed reading unbiased informative papers on the issue.

The university area is located in a portion of east Texas where much of the local economy is based on the timber industry. Also, several Wilderness Areas are within a 100 mile radius and at the time of the survey were embroiled in a lawsuit for cutting timber as a pest management technique. These factors combined to cause concern about the effect of maturation and history during the period between pre- and post-test. The concern was remedied by using the Randomized Solomon Four Group Design (Isaac, 1981). This design divides the tested population into four groups, cross analyzing the difference between the groups isolates any outside influence. The three-week period between the posttest and readings gave assurance that the study dealt with long-term learning, not short-term recall.

A questionnaire was developed using a variety of general multiple choice or true/false questions which determined the level of knowledge of participants concerning the management of wilderness. Statements were also developed to assess the participants opinions on wilderness management. These statements on opinion were scored on a scale ranging from strong agreement to strong disagreement.

Informational papers were read immediately following the pretest by the appropriate groups. The papers were unbiased, written in an informal style and designed to answer each of the knowledge questions in the questionnaire in a manner understandable by persons outside the environmental field. Responses to duplicate pre- and post-test questions by the students were used to determine the extent of change in knowledge after reading the papers.

A wilderness management attitude scale similar to that used by Hendee, et. al. in 1968 was also developed. While Hendee's "Wildernism" scale was designed to analyze wilderness users' values concerning Wilderness Areas, the scale developed in this study measured opinion on Wilderness Area management by rating the students from strongly management oriented to strongly antimanagement oriented.

Results

Three weeks after taking the pretest and reading the informative papers students showed a significant increase in scores on duplicate posttest knowledge questions. Student scores on the pretest were very low with the average student correctly answering less than 40 percent. Taken individually, several of the questions showed a significant increase in correct responses.

Opinion statements concerning wilderness management covered a wide range of subjects: wilderness preservation, user responsibility toward the resource and other users, and authority of administration. In general, students felt the wilderness resource should be protected from natural catastrophe, such as fire and insects, and damage caused by visitor overuse. Paralleling these opinions, the students were generally in favor of man-made development which would protect the resource. The man-made development specifically included designated campsites, developed trails, and sanitary facilities. At the same time, however, the students were strongly in favor of allowing the use of mountain bikes in wilderness areas. As far as consumptive forms of recreation such as hunting and fishing, students were neutral.

The wilderness scale scores indicated movement of student opinion toward wilderness values and promanagement of wilderness after reading the informational papers.

Discussion

Responses received from the students reveal they do not understand the dynamic nature of wilderness ecosystems. The students' opinions were based on very limited knowledge of the wilderness resource. What knowledge they possessed was often based on misinformation. However, reading short informative papers following a pretest, the students' knowledge increased, leading to the following conclusions and recommendations:

1) An immediate effort should be mounted to interpret to the public the ever-changing nature of wilderness. The public must be made to realize that what a forest (desert or prairie) is today may not be what it was 25 years ago nor what it will be 25 years into the future. Any ecosystem completely protected from forces similar to those in nature (such as prescribed burning or periodic flooding) will make the resource comparable to an unkempt garden, not a wilderness.

2) Informational and educational programs which explain the reasoning behind management policies should be instigated. Better understanding of why a policy was made could change the public opinion and reaction toward the policy.

3) Informative papers directed at specific issues written in an informal style do increase knowledge of the issue. Conditioning before reading such

informational papers, such as by a pretest will enhance learning the information supplied. Informational papers help opinions become more balanced toward good resource management policy, even if management isn't emphasized in the paper.

4) A greater effort should be made to inform the public of changes made in response to constructive criticism. Practices such as reintroduction of native flora and fauna and removal of man-made structures from wilderness areas should be pointed out to the public.

Bibliography

Caldwell, L.K. 1970. Epilogue: Environment and the Shaping of Civilization. In *Congress and the Environment,* ed. R.A. Cooley and G. Wandesford-Smith. Seattle, Washington: U. of Wash. Press. pp. 244-268.

Hendee, J.C., W.R. Catton, Jr., L.D. Marlow and C.F. Brockman. 1968. *Wilderness Users in the Pacific Northwest--Their Characteristics, Values, and Management Preferences.* U.S.D.A.-Forest Service Research Paper. PNW-61. Pacific Northwest Experimental Station, Portland, Oregon. p. 92.

Evaluating Interpretive School Programs: A Case Study in Metropolitan Boston

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Abstract

Evaluation is an important tool for increasing the effectiveness of interpretive programming. It requires time, staff, money, and clearly written objectives to be useful. Because interpretive sites vary, so should the evaluation techniques. The evaluation of school programs in metropolitan Boston highlights what are some of the pitfalls of evaluation design.

Introduction

Evaluation is a process of determining the worth or value of an activity. The purpose of evaluation for interpretive activities is to determine whether they have been effective in meeting the objectives of the event. Thus the objectives of interpretation at a given site are the basis for designing the evaluation technique.

The Massachusetts Metropolitan District Commission (MDC) provides interpretive school programs at some of their reservations and historic sites around the Boston metropolitan area. The primary objectives of interpretation for the MDC is to aid in management of the site and increase the safety and enjoyment of the visitor. Thus an evaluation technique for interpretive school programs must concentrate on determining whether the activities will increase school children's safety and enjoyment. It must also look at whether the site will be better managed (i.e., will the children's behavior be appropriate to the site when they return) as a result of the children's participation in the program.

The interpretive school program evaluation was administered through the use of a survey to teachers when the class had completed the program. This process sounds much simpler than it was. The purpose of this paper is to show the trials and tribulations of designing a survey, administering it, analyzing it, and presenting the results in a useful format. The use of a statistic program for this project, that is in the public domain, will also be discussed. Interested people may request a copy.

Survey Evaluation Design

Based on the objectives for interpretation in the MDC, it became clear that a survey of children participating in school programs was necessary for evaluation. Either the children or the teachers could be surveyed. Because of the large number of children and variety of age groups, the former was deemed impossible. Thus the first tribulation in the evaluation process was that results would have to be based on the subjective views of teachers.

Design of the questions and the format of the survey is dependent on a number of variables. Some of these include:

- How many questions can teachers reasonably be asked to answer
- How difficult can the questions be
- Can a single type of survey be administered at a variety of natural and historic sites in the metropolitan area and still be useful
- Will the interpreters at these sites agree to the type and number of surveys, and will they actually administer them
- Do teachers have the time and desire to complete the survey after the program (mail in surveys are not desirable in this instance because of low return rates)
- Will the surveys be statistically reliable (i.e., can the results of this study be extrapolated to the metropolitan school population in general, or are the results only descriptive of those schools surveyed)
- How should the surveys be designed so that they are easy for the teachers to understand, yet easy to input into the computer
- Will this evaluation process be open to evaluation (i.e., if it doesn't work can it be changed to be more useful)

The following is the result of discussion, research, test runs, and rewrites. Not everyone was completely happy with this format.

Evaluation Instrument

Dear Teacher,

Thank you for taking part in a Metropolitan District Commission (MDC) school program. To help us increase the future effectiveness of the programs please take a minute to answer the questions below, and return this paper to your MDC group leader. Thank you for your assistance.

Instructions

1) Please read the questions and the answers, and then circle the number of the response to each question, when indicated.

2) Please base your answers on the students attending this trip which you teach at school, not other groups of students accompanying you.

3) There is room at the end to write in any specific comments on the program your students attended.

Questions

1) How much time did you spend in preparing the students for this field trip?

1 - Zero to one hour
2 - Two to three hours
3 - Four to five hours
4 - Six to seven hours
5 - Eight or more hours
6 - Don't know

2) How many field trips have the students on this trip been on during this school year (not including this one)?

1 - None
2 - One or two
3 - Three or four
4 - Five or six
5 - Seven or more
6 - Don't know

3) Considering your students on this trip as a whole, please rate their degree of attentiveness to the group leader and the activities.

1 - Very attentive
2 - Attentive
3 - Neither attentive or inattentive
4 - Inattentive
5 - Very inattentive
6 - Don't know

4) Please compare the behavior of your students in the classroom with their behavior on this field trip. Consider both those students who are well-behaved in the classroom and those who are poorly behaved. Circle only one response for the column indicated poorly behaved in the classroom, and only one response for the column indicated well behaved in the classroom.

	Students Well Behaved in the Classroom	Students Poorly Behaved in the Classroom
Behavior much better on trip than in class	1	1

Behavior better on the trip than in the class	2	2
Behavior the same on the trip as in the class	3	3
Behavior worse on the trip than in the class	4	4
Behavior much worse on the trip than in class	5	5
Don't know	6	6

5) Please rate how much you think the students enjoyed the trip.

1 - Very enjoyable
2 - Enjoyable
3 - Neither enjoyable or unenjoyable
4 - Unenjoyable
5 - Very unenjoyable
6 - Don't know

6) Please estimate the percentage of students that would be very likely, likely, neither likely or unlikely, unlikely, and very unlikely to break rules in the reservation after attending the program. Please be sure that the total equals 100%. The following is an example:

Very likely they would break rules 0%
Likely they would break rules 5%
Neither likely or unlikely they would break rules 10%
Unlikely they would break rules 30%
Very unlikely they would break rules 55%

Please fill in the percentages below for your students

Very likely they would break rules ...._____

Likely they would break rules ...._____

Neither likely or unlikely they would break rules......._____

Unlikely they would break rules..................................._____

Very unlikely they would break rules ...._____

7) Please rate how much factual information your students will acquire from this field trip as compared to what they would acquire in a similar period of time in the classroom.

1 - Students acquire much more information on the field trip than in the classroom
2 - Students acquire more information on the field trip than in the classroom
3 - Students acquire the same amount of information on the field trip as in the classroom
4 - Students acquire less information on the field trip than in the classroom
5 - Students acquire much less information on the field trip than in the classroom
6 - Don't know

8) Please rate how much you think the students would want to return to this reservation.

1 - Very interested in returning
2 - Interested in returning
3 - Neither interested or uninterested in returning
4 - Uninterested in returning
5 - Very uninterested in returning
6 - Don't know

9) We would like to know if you have any specific comments about this program, the rangers who lead it, the reservation, logistics of the program, the use of audiovisuals, etc. Please write them below.

Thank you very much for your help. We hope to see you on another MDC school program.

Analysis

A statistics program, that is in the public domain, is being used to analyze the completed surveys. It is called MYSTAT (copyright © 1987 Systat, Inc. All rights reserved. You may copy this disk and give a complete copy of its contents to others for teaching, research, or data analysis.). I will make copies for those individuals that send me a 3.5" disk to the address above.

The results of the analysis are underway, so they will not be presented here. However, a preliminary look at responses to surveys from five sites indicates that the questions were too difficult and too long for teachers. Also, the unique conditions of each site that has school programs means that a single type of survey is useful for comparisons between sites, but often not for the individual sites.

Conclusion

While the importance of evaluations can't be understated, the time, money, staff, and equipment available will dictate the type and extent of evaluations and their analysis. The evaluation technique used must be user friendly to be effective. Evaluations must, in turn, be evaluated to determine if they are answering the questions that you are asking. And finally, the objectives of the program that you are evaluating must be clearly stated. To paraphrase, you can't tell how good your evaluation is if you don't know what you are trying to do.

Bibliography

Fowler, Floyd J. 1984. *Survey Research Methods.* Applied Social Research Methods Series. Sage Publications, Beverly Hills.

Marsh, John S. 1983. *Natural and Cultural Heritage Interpretation Evaluation.* Conference proceedings, Department of Geography, Trent University, Peterborough, Ontario, Canada, K9J 7B8.

Rutman, Leonard, Ed. 1984. *Evaluation Research Methods: A Basic Guide.* Sage Publications. Beverly Hills.

The Anything Bag: A Group Exercise in Creativity

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Abstract

Pleasant interpretive moments often happen unexpectedly, when we use common objects in an unusual context to illustrate a point. It's often difficult for interpreters to think creatively, especially given the crush of paperwork and other mundane requirements of interpretive organizations. The Anything Bag offers working interpreters a chance to free their minds to new possibilities.

The Anything Box

The Anything Box by Zenna Henderson (published by Avon in 1969), is the story of a quiet, withdrawn little girl whose teacher observes her looking intently into a rectangular space defined by her small fingers. It turns out the girl has an "Anything Box." The box allows the holder to be anywhere he or she wants, to experience the place fully.

The Anything Bag

Based on the premise of that short story, the "Anything Bag" is an approach to breaking up creative mental log jams. It allows us to look into an interpreter's fanny pack and find endless possibilities. What's interpretive about a pile of popcorn? An old feather? A hunk of clay? Most importantly, how can interpreters free themselves to find creative solutions to old problems?

Participants are given a variety of tasks (see the outline below).

This type of workshop isn't for taking notes: it's for getting up and letting go. Participants will find an array of objects and assignments for using them that will make the commonplace magical.

The Anything Bag

I) Rules for a Session

- Ideas are just ideas, neither good nor bad.
- Don't worry about what's impossible.
- We hope you get an idea you can use on the job; if not, we hope you get ideas for thinking of ideas to use on the job.

II) Outside Exercises

1) Seeing the commonplace in new ways: viewing a ____________.

2) What if...(work in small groups with objects we find--what if this small rock weighed a ton, etc.)

3) Play (a few new games?), or doing something else when you can't think of an idea.

4) Brainstorming (group approaches to idea generation). Brainstorm a problem like ____________________________, (List in Section III.)

III) The Table Game (back inside)

Set up a table with the following items:

Fruits, vegetables, popcorn popper, popcorn, balloons, string, pens, pencils, colored paper, glue, bones, poster board, bowl, etc.

Divide into teams of four. Each team gets two minutes to use the items on the table to solve the following problems:

1) Invent and demonstrate a new sport.

2) Explain continental drift.

3) Explain erosion.

4) Demonstrate how to get old.

5) Explain the meaning of life.

6) Why a duck?

7) Explain how you'd escort Prince Phillip through the park.

8) Explain conception.

9) Show how a geyser works.

10) Create a form of transportation.

11) Design a new herbivore.

During the time each team is preparing, the other members of the group will be taking the following quiz.

Quiz

1) Go to a part of the room you've never been in before. Look back at where you were sitting. If you were a fly where would you go next?

2) Go to where you (as a fly) would go next. Look at where you were sitting. Describe the view.

3) Return to where you were sitting. Now look at the two places you've been. What do you now know about the room you didn't know before?

4) Complete this sentence: "Once upon a time there was a room with one small fly on one of its walls..."

5) Add a paragraph on the back of this paper that goes with the sentence above.

IV) Now go outside and play "The National Park Game." Divide into groups of two. Use string for boundaries, toothpicks for points of interest, and peanuts for money.

Bibliography

Henderson, Zenna. 1969. *The Anything Box.* New York: Avon Books.

Toward Professional Excellence: The National Park Service Interpretive Skills Curriculum

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Abstract

Interpretation is a professional activity, requiring individuals who possess knowledge from which to interpret; skillfully use communicative skills and abilities; and contribute to the professional growth, development and advancement of their chosen profession. The National Park Service Interpretive Skills Training Program provides an opportunity for development of professional excellence.

The Challenge Identified

In 1982, the National Park Service (NPS) held a conference for interpretive personnel at Cumberland Island National Seashore, St. Mary's, GA. The purpose was to assess the status of interpretation across the NPS. Ten regional NPS Chiefs of Interpretation met with the Washington NPS Interpretive staff and field interpreters. They drew upon personal experience, reports from park managers, and contracted assessments by university professionals. Their conclusion was that interpretive program quality in the NPS had slipped. Although examples of excellence were still to be found, conference members judged the overall quality to be lower than it had been five years earlier.

They identified several reasons for this deficiency. One main reason was that the large budgets for interpretive services from the Bicentennial and other special interpretive programs of the 1970s had disappeared. Budget cutbacks forced cuts in personnel, especially uniformed interpretive rangers. Another factor was the lack of service-wide skills training in interpretation for three years. Yearly until 1979, the NPS Division of Training offered one or two 80-hour interpretive skills courses with 25 to 50 field personnel attending.

A major recommendation by the Cumberland Island group was to reinstitute a strong Interpretive Skills Training Program--one that would train hundreds of personnel yearly, not just a few dozen. The avenue chosen to accomplish this was to use a service-wide training program to train interpretive-skills instructors. If 25 to 50 instructors could be trained to present interpretive-skills training within the ten NPS regions, the return would be tenfold and 500 to 600 employees could be reached each year rather than 50 to 60.

Instructor Workshops

In 1983, the Stephen T. Mather Employee Development Center in Harper's Ferry, West Virginia presented the first two Instructor's Workshops in Interpretive Skills. About 50 interpretive-skills instructors attended those original workshops, making up ten regional Interpretive Skills Teams. These workshop participants developed, through a nominal group process, a curricula for a Beginning and Advanced Interpretive Skills Course. These evolved into Skills I: Personal Services Interpretation and Skills II: Nonpersonal Interpretation. Each course was designed to be 40 hours of classroom instruction.

The workshops were very successful in their goals of training and organizing skills teams which in turn held workshops to train field interpreters. Almost 1,500 individuals were trained by Regional Interpretive Skills Teams by the end of 1985.

Two factors brought about a third Instructor's Workshop. First, several of the original 50 members of the skills teams transferred, creating a shortage of team members in some regions. The other factor was the arrival of a new NPS Director, William Penn Mott, who supported the program.

In January, 1986, Mather Employee Development Center sponsored the third Instructor's Workshop. During this two-week session skills-team members participated in a fundamentals of training workshop, created a new 80-hour curriculum (Skills III Interpretive Techniques and Methods for Special Visitors and Situations), and field-tested lesson plans at NPS sites.

With Mott's support, all skills curricula programs increased from 40 to 80 hours of instruction time. Curricula revision emphasized practical, skills-related training and philosophy with secondary emphasis on policies and guidelines. Forty hours of formal, on-site training were developed for each course. The other 40 hours were packaged to allow Regional Teams to have flexibility in developing precourse and postcourse assignments or in increasing the number of classroom hours. Options were created to allow team members and participants to meet the time constraints of their normal job duties.

In January, 1988 at the fourth Instructor's Workshop the skills curricula was fine tuned and refocused so that interpretive training would lead the NPS into the 90s. Skills I was revised so that it could only be offered as an 80-hour course. This helped ensure that beginning interpreters could master the basic skills. Skills III was broken in two curricula: Special Populations and Audiences (40 hours) and Special Interpretive Methods and Techniques (40 hours). An 80-hour Interpretive Skills IV, Interpretive Writing and Design, has also been developed and will be offered yearly at Mather Employee Development Center.

Objectives for Skills I, II, and III are listed below. In each revision of the program the trainers kept in mind that the curricula serves ten regional teams, and that consistency from region to region was necessary to preserve the service-wide nature of the skills program. Presently, there are 90 interpreters who have taken the Instructor's Workshop and who actively participate in the 10 Regional Interpretive Skills Teams.

The Interpretive Skills Curricula

Interpretive Skills I: Personal Services Interpretation

At the end of the Skills I training course, each participant will fulfill the following primary and secondary objectives.

Primary Objectives

- Develop a personal philosophy of interpretation, examine the philosophies of Tilden and others, and describe the discipline's role in NPS history
- Apply communication skills to prepare, present, and evaluate his/her personal interpretation
- Prepare and present an effective interpretive talk, walk, and illustrated program
- Demonstrate key concepts all interpreters should apply when operating a visitor center, performing roving interpretation, and when making individual contacts

Secondary Objective

- List methods for keeping his/her interpretation creative and fresh, and for avoiding burnout

Interpretive Skills I Topics

- Interpretive Skills Orientation
- Interpretive and NPS History/Philosophy
- Communications
- Understanding the Visitor
- The Park/Visitor/Interpreter Interactions
- Themes and Objectives
- Program/Peer Critiquing
- Talks
- Bag of Tricks
- Questioning Strategies
- Visitor Center Operations
- Walks
- Basic Audio/Visual Equipment Maintenance
- Creativity
- Interpretive Research
- Illustrated Programs
- Keeping Fresh/Avoiding Burnout

Interpretive Skills II: Nonpersonal Services Interpretation

At the end of the Skills II training course, each participant will be able to fulfill the following primary and secondary objectives.

Primary Objectives

- Apply sound principles of writing and design to park interpretive publications
- Outline strategies for preparing press releases and public service announcements and for conducting spontaneous media contacts
- Perform basic mechanics for producing a video program and a multi-image slide program
- Produce a concise, well-edited label/exhibit for his/her park

Secondary Objectives

- Apply nonpersonal interpretive skills to a real park problem
- Describe approaches for interpreters to use when dealing with other park operations
- List ways computers can aid an interpretive operation
- Use advanced slide and overhead transparency techniques

Interpretive Skills II Topics

- Interpretive Skills II Orientation
- Problem Solving/Course Problem
- In-House Communications
- Interpretive Writing
- Publications: Planning and Preparation
- AV Applications: Advanced Program Techniques
- AV Applications: Multi-Projector/Video Setup
- Media Relations
- Computer as an Interpretive Tool
- Exhibit Planning and Preparation

Interpretive Skill III (A): Special Populations and Audiences

At the end of the Skills III training course, each participant will be able to fulfill the following primary and secondary objectives.

Primary Objectives

- Use special interpretive techniques for interpreting to the physically, sensory, and mentally disabled; the elderly and ethnic and international visitor
- Implement outreach/off-site interpretive programs
- Evaluate his/her own park for general adherence to guidelines established in Section 504 of the Rehabilitation Act

Secondary Objective

- Formulate strategies for implementing special interpretive emphases/events as called for by service-wide directives

Interpretive Skills III Topics

- Skills III Orientation
- Program Accessibility for Special Populations
- Mobility Impaired, the Elderly, and the Sensory Impaired, Cross-cultural Interpretation
- Special Events/Emphasis
- Extending Park Influence (Outreach)
- Field Exercise

Interpretive Skill III (B) Special Interpretive Methods and Techniques

At the end of the Skills III training course, each participant will be able to fulfill the following primary and secondary objectives.

Primary Objectives

- Prepare and deliver a variety of special interpretive presentations, including demonstrations, storytelling, costumed interpretation, living history, and dramatic/creative arts
- Prepare interpretive programs for children, school groups, and children in families using recognized environmental education and other techniques
- Use sound interpretive methods for dealing with controversial issues

Secondary Objective

- Describe the global, international scope of NPS interpretation and how it fits into international efforts of conservation

Interpretive Skills III Topics

- Skills III Orientation Development and Application of Interpretive Strategies
- Solving Park Problems with Interpretive Solutions
- Living History
- Costumed Interpretation
- Creative/Performing Arts-Storytelling
- Demonstrations
- Children's Interpretation
- Environmental Education
- Skills Development in Interpreting Controversial Issues
- Presentation Exercise

Conclusion

This program is working well largely due to the dedication and hard work of the Skills Team members. It's they who have decided what should be taught and how to teach it, giving them all a vested interest in the final product.

The strategies outlined at the Cumberland Island Conference and the priorities of a new director have succeeded in greatly upgrading the quality of interpretive programs in the NPS. At an Interpretive Task Force held in Washington D.C. and at an Interpretive Directions Workshop held for NPS Interpreters, the consensus was clear--the Interpretive Skills Training Program of the past five years has improved the NPS public interpretive services by stimulating employee morale, focusing upon interpretation as a legitimate management activity in the NPS, and refining interpretive skills throughout the NPS.

Training Opportunities

In several instances the Regional Skills courses have been offered and conducted in conjunction with state, local, private, and other federal agencies. In some cases this was accomplished on a tuition basis, and in others a cost-sharing was achieved by using state and local facilities for classrooms and participant housing. Everyone comes out ahead when sharing interpretive philosophy and ideas. We would appreciate hearing from you about attending one of our regional skills courses or to discuss the possibility of joint training programs. Please contact any of the authors at their title address.

Live Animal Interpretation

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Abstract

The Arizona-Sonora Desert Museum is a living museum which interprets the Sonoran Desert region. The live animals displayed in naturalistic enclosures, as well as those chosen for use in interpretive programs, illustrate specific roles in their environment. Interrelationships among animals and with their environment are the basic concepts in all of the Museum's exhibits and programs. The live animal interpretations will be discussed under two formats: live animals used in exhibits and contact animals in personal interpretations.

Animal Habitat Exhibit

Naturalistic exhibits at the Desert Museum are designed to provide habitats that duplicate the animals' natural environment as close as possible. The goal in creating naturalistic exhibits is to educate the public about wildlife values and the importance of wildlife habitat. The Museum staff, consultants, Board of Trustees, and volunteers all cooperatively work towards designing, constructing, and interpreting truly authentic habitat exhibits. Every opportunity to use appropriate exhibit materials must be seized and developed to tell the story accurately. Native plants and other landscape materials (leaves, twigs, and gravel) as well as artificial rock structures must be appropriate to the habitat of the animal displayed.

When choosing animals for communal displays, serious consideration is given to their compatibility, display character, and natural association. The exhibit animal must display natural behaviors as much as possible, yet be visible to visitors. The habitat must provide an appropriate background ensuring that the viewer understands the importance of that animal. While many animals can't be displayed in the same enclosure, there are some species which can be exhibited together in well-developed habitats without conflict. The use of multispecies displays enhances our efforts to instill in the public an appreciation for the interrelationships between plants, animals, and the environment.

Mountain Habitat

One exhibit at the Desert Museum is the Mexican pine-oak woodland habitat. This exhibit interprets the 4,000-7,000 foot elevation life zone of the mountains in southeastern Arizona and northeastern Sonora Mexico. Displayed in this habitat setting are mountain lions, black bears, gray foxes, Mexican gray wolves, Coue's white-tailed deer, Merriam's turkeys, ravens, thick-billed parrots, Stellar's jays, and Montezuma quail. The exhibit is approximately one acre and is divided into canyons and mountains by artificial rock structures and mountain vegetation. Close attention to detail was followed and the exhibit gives the visitor the feeling that they have observed typical wildlife behavior. The opportunity for the visitor to linger in front of enclosures has been developed through the use of benches, shade trees, ramadas, and interpretive signs. Visitors observe animals (often having to scan the habitat to find them) just as they would in a mountain setting, leisurely walking through trees and meadows. Interpretation is provided using scientific facts while weaving interesting stories about the animals' natural behavior. Animals pet names are not used and generally there are no references to the Museum's captive management procedures.

Animal needs considered during the design stage included: flight distance from public viewing area; escape routes (dominate/subordinate interactions); seclusion/retreat areas from the public, staff, and other animals; the satisfaction of spatial requirements for normal social interactions; and adequate size of off-exhibit holding areas. The exhibit design checklist is extensive and includes input from the professional animal care staff and from the Maintenance, Education, Interpretation, and Exhibits departments at the Museum.

Live Animal Demonstrations

Live animals handled in interpretive programs are not exhibit animals; they are housed in off-exhibit areas within the Education/Interpretation Department. These animals are conditioned to a certain degree and are often nonreleasable or rehabilitated individuals. The species used are varied and include scorpions, tarantulas, toads, gopher snakes, king snakes, kestrels, great horned owls, screech owls, small rodents, and a lilac-crowned parrot.

The interpretive theme includes the species' natural history, interrelationships with other animals and their environment, and general environmental ethics. The animals' health and welfare is of prime concern, often dictating availability and duration of handling. With the exception of snakes, the visitor is never allowed to touch the live animal. Staff and docents are trained to handle and interpret the animals with a major emphasis on observing any signs of animal stress. Stress is a real danger for some handled animals and can quickly lead to health problems. It's minimized by following good husbandry practices and specific handling techniques. Any animal that becomes stressed during an interpretive program will cause that program to be cancelled. The Education/Interpretation Department animals are monitored closely by staff and receive the same veterinary care as the exhibit animals. During the snake touch the interpreter maintains control at all times, allowing visitors to touch the snake in a controlled manner. We want to provide visitors with an opportunity to get very close to a live animal and to learn about it through first-hand observation.

Conclusion

The philosophy at the Desert Museum is to create a personal, first-hand encounter with animals that can be used to develop an understanding and appreciation for the animal and its environment. We must constantly be ready to use the interpretive moment as an opportunity to enhance this powerful experience, thus furthering sound environmental ethics.

There are no pet names for animals used and Museum anthropomorphic terms aren't used during the interpretive talks. The philosophy is that when staff and visitors use language that humanizes the animals, serious educational messages concerning the animals and their environment are lost.

At the Desert Museum we strive to interpret living organisms as though they were encountered in their natural habitat. The benefits of visitors touching a snake or seeing a great horned owl up close are difficult to measure--unless you've seen their eyes light up following their personal encounter.

Bibliography

Clark, Bruce. 1987. "Exhibit Design Checklist." *Animal Keepers Forum.* June. pp. 169-172.

Marcellini, Dale L. 1987. "Contact Animals: The Medium is the Message." *International Zoo Educators,* No. 18, pp. 13-15.

The Potomac Group of Metz Train Youngren, Architects. 1987. *Arizona-Sonora Desert Museum Comprehensive Plan.*

Seidman, Mike. 1986. "Learning at the Zoo, Part 2." *Animal Keepers Forum.* April, pp. 122-126.

Resource Interpretation:
The Transfusion into Alaska's Tourism Industry

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Abstract

Since 1984 in southcentral Alaska, there has been an explosion in the growth of commercial recreation and tourism. This expanding frontier is becoming the economic mainstay of local communities now suffering from the fall in world oil prices, and the emerging marketplace for applications of resource interpretation in an expanding professional environment.

Throughout its past seventy years of U.S. applications, traditional park and forest interpretation has been confined to operational programs dealing with the public sector within well-defined political and social boundaries. In the past decade, resource interpretation has reached outside traditional settings to play a complementary role in the private sector involving the full spectrum of commercial tourism. Tilden's principles of interpretation provide for enhanced visitor enjoyment whether applied on motor coach tours, cruise ship lectures, or railroad passenger cars.

This program explores the recent growth in cruise ship visits and its linkage with the transportation experiences created by resource interpreters outside traditional natural, cultural, and recreational settings.

The Geographic Giant

In 1980, after nearly a decade of land claims and conservation proposals for forests, parks, scenic and wild rivers, and wildlife refuges, the Alaska National Interest Lands Conservation Act established a network of scenic and scientific units across a state the combined size of California, Texas, Montana, and Maryland. The massive conservation legislation opened the door for public enjoyment of federal lands and stimulated a desire for creative interpretive programming (U.S. Congress, 1980).

Imagine the interpretive potential in a state that is as large as Ireland, the United Kingdom, Spain, France, Portugal, Austria, Switzerland---plus Rhode Island and Connecticut. Time, distance, and space take on new relationships. Although resource interpretation is a function of geography and culture, it demands a unique sense of time and place to be performed well by the interpreter.

Interpretive themes and values cross political boundaries and ecosystems with considerable ease. The opportunity to expand basic conservation themes into the commercial recreation and tourism industry has never been better than at the start of southcentral Alaska's cruise ship industry.

Tourism

In 1984, the first season of regularly scheduled cruise ships began coming into Whittier where passengers were disembarked for transfer to Anchorage hotels and airport some 63 miles down the line. By 1988, some 92 cruise ships docked at ports in southcentral Alaska which accounted for approximately 150,000 visitors (Alaska Visitors Association, 1988).

Tourism is growing due to marketing efforts by the state of Alaska and by the free publicity generated during the land debates over conservation lands in the 1970s. In 1987, one million visitors came to the state and left behind them some one billion dollars! The same year, tourism created 19,000 new jobs. Most of these jobs were seasonal in nature. Driver-guides, ship lecturers, railroad narrators, hosts and hostesses, museum volunteers, river guides, flightseeing narrators, walk-on guides, tour leaders, group escorts, and related visitor information service people are potential new members for the National Association of Interpretation. While many are performing true interpretation, most of these employees could benefit from Tilden's six principles.

The Alaska Cruise Train

The Alaska Cruise Train is just one of many innovations in the field of improved railroad transportation in the past few years. It is only one of several passenger cars that are privately owned by a corporation and which provide special service to the growing numbers of visitors. The Super Dome, Ultradome cars, and cruise train are part of a generic line created by Mr. Tom Rader, former owner of Tour Alaska, Inc.

In its second season of operation, the Alaska Cruise Train has transported a total of 195 train loads of cruise ship passengers along the 63 mile length of track from the port of Whittier to Anchorage. Whittier handled over 50 percent of the 92 cruise ships that sailed into southcentral inlets in 1988. Every train load had a resource interpreter who spoke to the passengers over a public address system linking all cars. The captive audience varied from 450 passengers per trip to 1,200 passengers per trip. The cruise train made two trips per day, three days per week. In 1987, the cruise train hosted the largest audiences for an interpretive program given on a regularly scheduled basis. In two trips and on a train longer than two and one half football fields, the train narrator presented the two-hour program to nearly 2,300 visitors from the Royal Princess Cruise Ship. By the end of the 1988 season, approximately 120,000 visitors will have captured the essence of Portage Pass and Turnagain Arm as they tracked down the rails of steel toward their destinations.

Railroad programs have been offered to a limited extent by the Alaska Railroad since 1982 when it began a high school visitor host program which trained students for summer employment on the train run to Denali National Park and back. The program still operates with much useful information provided by the hosts and hostesses, but with very little interpretation.

Basic information, site orientation, storytelling, and various forms of musical entertainment have been the pattern for passenger service since 1984 when Mr. Tom

Rader created Tour Alaska's "Midnight Sun Express." His super dome and new ultradome cars have set a luxury standard in railroad transportation since his innovative railroad car designs were placed in service between Anchorage and Fairbanks. Although the trains created the role of host-guide for the full canopy of wrap-around viewing glass from which passengers could see the mountains, streams, and wildlife, the host-guides have presented entertainment, but not resource interpretation.

On the Alaska Cruise train which came onto line in 1987, Tom Rader demanded quality interpretation over factual and pure informational talks. As the cruise train rolls along from the port city to Anchorage and back each day, the stark and subtle landscape has come alive. Rader's Alaska Cruise train is the first private sector service to promote resource interpretation and to encourage the development of a holistic tour that really emphasized the pure enjoyment of the trip.

Unlike normal railroad concepts for hauling product from point A to point B in the best time for the best profit, the cruise train recognizes the value of bringing a people product to the destination in a good mood. After a tiring day of travel via plane and motorcoach to reach a railroad depot in Anchorage, passengers are often exhausted by the time they reach the cruise train to Whittier and the cruise ship that awaits them. Resource interpretation has proven its worth as a public relations tool to "soften" attitudes and relax weary passengers. The attitude change from the time they get on the train to the time they disembark two and one half hours later is quite noticeable. Eyes are opened and attitudes have changed as the panorama of glaciers, bore tides, wildlife, history, and geology unfolds through the narration of the train interpretative geologist.

The cruise train program called, "Tracking Turnagain Arm," tries to use the principles of good interpretation while it sensitizes new visitors to the ever-changing, fragile nature of the Alaska landscape and its wildlife. The program is value oriented. Terragon North, a consulting firm in Anchorage with over 35 years experience working with park publics and tourism, developed the interpretive themes and narration.

Resource Interpretation

Both resource interpreters and visitors can be overwhelmed by the size and vastness of the resources. Unending menus of the natural, cultural, and recreational resources demand focus into relevant themes for presentation. Oceans, mountains, volcanos, and earthquakes exist on large scales and form the fabric of Alaska. The resource interpreter keys into a smaller, but interrelated feature or object which brings meaning to the whole. A dead tree can tell a larger story of the Good Friday earthquake which flooded and killed hundreds of thousands of trees like it across the state. The playful beluga whale can bring to light the sweeping tides of Turnagain Arm--the second highest in North America. The hunk of rock along the railroad track can inspire the story of how that rock came to be there from its original depositional site off the coast of Oregon. Information without revelation of some larger truth that lies behind the statement of fact is simply some nice information and no more.

> Interpretation should aim to present a whole rather than a part, and must address itself to the whole rather than to any phase (Tilden, 1967).

Interpreters should never select a subject or concept that can not be seen or enjoyed from a given site. Broad concepts that do not relate to anything on the site will fail because they will be outside the immediate experience of the visitor trying to relate. Likewise, the cruise train narration that does not select and identify features out of the window of the train will fail. The story must match the site or feature. The message must also match the media.

> Any interpretation that does not somehow relate what is being displayed or described to something within the personality or experience of the visitor will be sterile (Ibid).

In Alaska over the past decade, the term "resource interpretation," has been applied to the natural, cultural and recreational components of the large systems with which planners deal. Resource interpretation is a planning, managing, and communicating tool which can be integrated at various phases of program development and execution. Unlike Tilden's more confined communication principles, resource interpretation reaches into the full spectrum from planning to eventual program implementation years later.

> Resource interpretation is an integrated planning, management and communication system for value-oriented, human experiences derived from leisure settings.
>
> Resource interpretation recognizes Tilden's six basic communication principles for interpretation and applies them throughout the integrated system.
>
> Resource interpretation encourages revelation of natural, cultural, and recreational values identified from the environment and used for visitor understanding, appreciation, and protection of significant resources.
>
> Resource interpretation does so in such manner and by such means as will leave the resources unimpaired for the continued inspiration and relevant enjoyment of future generations (Follows, 1988).

The Market Design

Resource interpreters have come to recognize a principle in Alaska which relates directly to marketing, promotions, and public relations in the tourism industry. Visitors to Alaska are not seeking the destination or end product so much as they are seeking the intangible element. Seeing serendipitous scenes, encountering wildlife, talking with a Native, rafting a wild river, touching a glacier, or catching a glimpse of North America's highest mountain, Mt. McKinley, are more important than the tour, coach, train, plane, or destination package for which they paid. "Creating the experience" is the key to successful marketing for tourism and the key to successful resource interpretation.

The visitor experience is basically the sum total of all their interactions, both positive and negative, while on the resource. For that visitor experience to be positive and reflect the best the company or park has to offer, the resource interpreter must keep the large perspective regarding the visitor needs. By creating the visitor experience through wise planning, management, and communication processes, the resource host or corporation will benefit.

The real product is more than a seat on a plane, or cabin on the cruise ship, or a window seat on the scenic side of the Alaska Cruise Train. It is how the visitor feels about it while they are doing it that counts. How they will feel is part of a design the resource interpreter creates from the resources at hand. It requires research, planning, and presentation. It requires an objective or goal to know if the program succeeded. Marketing plans in Alaska tourism build quality visitor experiences that attract repeat visits to the great land, where resource interpreters have unparalleled opportunities to support planning and management goals of their own land-managing agencies. The visitor experience is built not only on classroom instruction, but on provocation. On the Alaska Cruise Train it isn't getting there that is as important as what happened in the minds of the visitors along the route. Provocation, provocation, provocation..!

> The chief aim of interpretation is
> not instruction, but provocation (Tilden, 1967).

Robert W. Service, the great poet of the Yukon whose verses about the great North relate equally to Alaska, describes the feelings of a former prospector who struck it rich and now yearns to return to the Yukon again. In the poem, "Spell of the Yukon," the prospector vows to return and rid himself of the city life that is taking his gold. But in returning, it isn't the gold that he is wanting so much as just finding the gold! In that line is the intangible element of experience and the secret of marketing and visitor interpretation in Alaska. It's the experiences and the myths that poets like Robert Service create as part of the legend of a landscape that capture the minds of visitors and create a sense of anticipation and wonder (Service, 1940).

Conclusion

The establishment of the "quality visitor experience" which is designed around unique scenic and scientific resources to which visitors come for appreciation and enjoyment can do much to support the land management goals of private and public sectors dealing with commercial recreation and tourism. Quality resource interpretation extends beyond traditional park settings where its foundations all began over 70 years ago in Yosemite National Park (Shankland, 1954). Resource interpreters can have complementary roles in public and private sectors to encourage the land and water ethic that helps visitors understand the ultimate resource value and enjoyment in "just getting there."

As resource interpreters of the natural, cultural, and recreational scenes we are all part of a world community expanding our professions to every corner of the planet. Each year, the National Association of Interpretation will find new networks of dedicated resource interpreters forming mutual support systems. Whether private, public, or corporately employed, resource interpreters seek the same quality for their publics.

Not unlike public land management, commercial recreation and tourism depends on the preservation of the visitor experience generated from resource values around them. A prime concern for both tourism and related visitor industries is to maintain the resources and the environment in which they "sing" in a condition which continues to serve future generations. Resource interpretation supports that goal by designing multiple experience use options which leave the resource intact to serve publics over and over again. In leaving only their footprints behind they take away the memory of their experiences which truly never leave them. As the poet in me likes to confess:

> You can never leave Alaska
>   Until Alaska first leaves you
> Chasing sweet memories past you
>   From the Great Land you once knew.
>
> You may claim you left Alaska
>   But your longing shows what is true
> That you never leave Alaska
>   Until Alaska first leaves you.

Bibliography

Alaska Visitors Association. 1988. State of Alaska, Division of Tourism, Alaska Visitor Statistics Program. Data Decisions Group, Seattle.

Follows, Donald S. 1988. *Resource Interpretation and Multiple Experience Use Planning for Alaska's National Interest Lands*. Unpublished theses. University of Alaska, Anchorage.

Service, Robert. 1940. *The Best of Robert Service.* Dodd, Mead, and Company. New York.

Shankland, Robert. 1954. *Steve Mather of the National Parks*. Alfred A. Knopf. New York.

Tilden, Freeman. 1967. *Interpreting Our Heritage.* University of North Carolina Press. Chapel Hill.

U.S. Congress. 1980. Alaska National Interest Lands Conservation Act. Washington, D.C.

Creating Quality Exhibits Without Much Cash or Experience

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Abstract

You don't need years of schooling or a fancy exhibit shop to design and construct quality exhibits. Using a combination of common sense; a sequential process of planning, text writing, designing, and fabricating; and a few easily mastered fabricating skills, you can produce exhibits which look professional and get your point across.

Introduction

Exhibits can be an important asset to your overall interpretive program. In fact at many sites, exhibits will be the only exposure visitors get to your interpretive message. Yet as interpreters, we tend to spend most of our energy on "live" programs that only a small percentage of our visitors can enjoy. Branch out--build an exhibit.

Exhibit Planning

Careful planning is the key to a successful exhibit. The planning phase allows you to define your objectives, identify your audience, select your themes, choose your medium, research your subject, find suitable graphics and artifacts, and involve the community. Depending on the size of the project, the plan may be 50 pages or five, but every plan should answer a number of critical questions.

- Why is this project needed? Identify the existing problem or deficiency and how this project will correct it.
- Does this project fit within the organization's mission and goals? An organization's mission and goals provide the "common thread" which links all interpretive subjects. They also provide the guidelines necessary to avoid inappropriate subjects.
- Who is your audience? A careful analysis of your visitors should identify the types of visitors (families, individuals, organized groups), the number of

visits per year including seasonal trends, where they come from, and who they are (percent children, adults, special populations).

- What are the main points to cover? This is best presented in an outline. For projects consisting of two or more exhibit stations, an overall interpretive theme is needed to guide and focus the story. Each exhibit station should have a theme statement, normally one sentence, which provides the point of view or approach to the subject matter. This is followed by a narrative of one or two pages, which condenses the research material into a form easily converted to text. Also included here are suggested graphics, quotes, or artifacts to be considered during the design.

- What medium will best convey those themes? Consider your audience, your facility, and the themes carefully and objectively before you decide an exhibit is the way to go. Many subjects are best interpreted through AV shows, brochures, self-guided trails, or live programs.

- How will this project affect existing facilities, interpretive exhibits, and programs? New exhibits should complement nearby exhibits and the setting. Large panels may be visually disruptive at a scenic vista or historic home, while a modern design may not fit other exhibits in a rustic nature lodge. Do the new themes blend with the existing exhibit themes? Do the new exhibits disrupt the current visitor flow?

- Who will do the work? The length and detail needed in the plan will depend on who designs and constructs the exhibit(s). However, even if you do the work yourself, a complete plan answers all important questions that may cause problems later on. Plus every plan should be reviewed by other staff, supervisors, board or commission members, special interest groups, and community members. Reviews help eliminate errors, identify political hot spots, build teams, and open doors to new information and materials. If someone from outside your agency will do the design and fabrication, a detailed plan is a must.

The Graphics Package

A graphics package should be prepared during the planning phase. An assortment of graphics (historic photos, biological illustrations, maps, recent photos, etc.) provide the designer with the "scrap" they need to illustrate the exhibit. These materials identify the proper plant and animal species, appropriate color selections, historic dress styles, period equipment, portraits, or scenic views. Photo copies are fine at this phase, but a complete bibliography and access to original materials or photographic copies should be available.

Don't forget to check for copyright. Copyright protection is in effect for 50 years on all photographs or original art work. Most individuals or publishers will give you written permission to use their work for one time only in an educational exhibit. Never risk using a graphic without written permission.

Text Writing

A complete interpretive plan simplifies text writing, but doesn't make it easy. Remember your text is competing with a hundred other distractions, from sore feet to the gift shop. Text does not stand alone. It works with the graphics and artifacts to tell a story. Keep text to a minimum (about 150 words per panel) and break up the story with headlines, subheadlines, and body copy. Use quotes to strengthen the story. Use active verbs in concise sentences. Be consistent in your writing style and aim for a sixth- or seventh-grade reading level. Even at this level, about 20 percent of your adult visitors won't be able to read the text. Use a readability index to test your copy. Finally, edit and rewrite until it's perfect, then give it to someone unfamiliar with the subject to tear it down some more. The more review the better.

Exhibit Design

"Designers involved in this activity must be adept at manipulating photography, graphics, and typography. They must also be aware of architecture, interior and exterior space, traffic planning, crowd control, furnishings, lighting and acoustics, all types of audiovisual presentation, computer technology, as well as materials, construction, and installation methods. A highly developed sense of timing, drama, and fantasy can be helpful too."

Larry Klein
Exhibits: Planning and Design

Exhibit design is not simple. As a beginner, stay away from large projects which require complicated designs. In the long run it will cost less and look better if you call in professional help for large exhibits. However, designing single panels or simple exhibits requires mainly common sense.

Before you begin designing, read a few good books on the subject. Identify all the parameters which will affect the project: budget, your ability to fabricate the project, your work space and equipment, the exhibit location, environmental factors, security needs, temporary or long term, interactive or static, three dimensional or flat. These parameters will help your decide on the types of materials to choose.

Lay out your text, graphics, and artifacts, and choose the combination which illustrates the interpretive theme in a clear and fun way. Keep the presentation simple. Text size should be larger than 18 point and provide plenty of contrast between the background and copy. Blend the text and graphics in an appealing and logical way, and keep the text at an easy viewing level (between 4 ft. and 5 ft. 5 in.).

Interactive Exhibits

Exhibits should be both fun and educational. Interactive exhibits allow the visitor to participate in the exhibit, which is fun, and they also keep the visitor involved longer so presumably they learn more. Interactive exhibits can range from simple flip-up cards to state-of-the-art computers. There are many techniques available to involve museum visitors. Use your imagination when designing your exhibits, but remember one thing: interactive exhibits require heavy-duty components and continual inspection. There's only one thing worse than finding a broken exhibit with an out-of-order sign on it, and that's finding the exhibit without the sign.

Exhibit Fabrication

Fabrication techniques are as varied as design styles. However, no matter what the technique or budget, the end product should get your interpretive message across and be of the highest quality. It's impossible in report form to even begin to list materials and techniques. The most difficult part of the job for the beginner is knowing what techniques and materials are available. Visit museums, trade shows, or any other location where graphic arts are displayed. Take notes and photographs of what you like and don't like and innovative uses of materials. Find out who built the exhibit and ask questions. Go to the library and read magazines such as *HOW: Ideas and Techniques in Graphic Design*. Talk to the staff at the graphic arts store. But most important of all, jump in and try it. Experiment with various techniques and see what works for you. The bibliography lists some good sources of information on materials.

Evaluation

Don't wait until you are done to start evaluating the project. By all means, involve as many people as possible, from peers to visitors, in reviewing your plan, text, and design. It's far better to identify critical mistakes at this stage than when the panel is complete and on display.

After the exhibit is in place, take some time to watch visitors interact with it. Find out what they learned by asking them a few questions. Have other interpreters critically evaluate the exhibit. If you feel the comments are valid, change what you can. If you can't change the exhibit, keep the comments in mind so you don't repeat the same mistake next time.

Watch the exhibit over time to see how the materials hold up. Keep a notebook on the strengths and limitations of the various materials you used.

Bibliography

Baker, Charles L. 1981. *Planning Exhibits: From Concept to Opening*; Technical Leaflet 137; History News; Vol. 36 No.4, April.

Feher, E., Rice, K. 1985. *Development of Scientific Concepts Through the Use of Interactive Exhibits in a Museum*, Curator; Vol. 28 No.1.

Kerr, Sara. 1986. *Effective Interaction in a Natural Science Exhibit.* Curator; Vol. 29 No. 4.

Klein, Larry. 1986. *Exhibits: Planning and Design*; Madison Square Press, New York, NY.

Lipman, Michel, Russell Joyner. 1975. *How to Write Clearly*; International Society for General Semantics, San Francisco, CA.

Miles, R. S. 1982. *The Design of Educational Exhibits*, George, Allen and Unwin Ltd., London, UK.

Neal, Arminta. 1969. *Help for the Small Museum*, Pruett Press, Denver, Colorado.

Provost, Gary. 1980. *Make Every Word Count*, Writer's Digest Books, Cincinnati, Ohio.

Secor, Jo Ann, Lee Skolnik and Kate Bennett Mendez. 1987. *Philosophy and Fun at the Staten Island Children's Museum*, Museum News, June.

Shortland, Michael. 1987. *Commentary on Learning and Interactive Science Exhibits;* Nature, Vol. 328, July 16.

Williams, Luther A. 1960. *Labels: Writing, Design, and Preparation*, Curator; Vol. 3, No.1.

Witteborg, Lothar P. 1981. *Good Show! A Practical Guide for Temporary Exhibitions*, Smithsonian Institution, Washington, D.C.

The Chicago Manual of Style. University of Chicago Press, Chicago, Illinois, 1982.

The Exhibit File. A monthly newsletter published by J.P. Harrington and Assoc., 1117 Talleyrand Rd., West Chester, PA 19382.

Birds and Children:
A Successful, Sense-ible Approach to Interpreting Nature

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Abstract

Teachers of preschool and primary elementary school students are becoming more interested in programs which more fully use some or all of the five senses. They no longer seem satisfied with programs which are simplified nature talks or hikes, nor do they necessarily seek puppet shows and story times. Rather, they enjoy a program which teaches a nature topic through songs, dances, tactile activities, and craft projects.

We have created such a program on the theme of birds in Maryland. This program begins with an introduction that distinguishes birds from other animals, and proceeds to teach the children about birds using a bird movement dance, a bird-call guessing game, a bird-beak activity, and a bird-oriented craft project. Finally, the children practice making noises to attract birds, then go outside to test their skills and identify the birds called in. Children and teachers alike have responded very enthusiastically to this type of programming.

Introduction--Evolution of a New Program

Until recently, Meadowside Nature Center's preschool programming consisted of a choice of environmental puppet shows followed by a self-guided visit through Curiosity Corner, a hands-on discovery room. This popular and highly successful program continued for several years. However, it eventually became apparent that a change was needed. Staff naturalists were becoming bored and "burned-out." Group leaders, although satisfied with the current program, began requesting an outdoor experience for their students. In addition, the "powers that be" suggested that the staff incorporate more diversity in the preschool program.

To meet these changing demands, the naturalists created five innovative programs for preschoolers: Weather and the Seasons, Sensory Awareness, Indians of Maryland, Spring Amphibians, and Feathered Friends. Of all these choices, Feathered Friends quickly became the most requested program, mainly due to word-of-mouth recommendations by teachers who had experienced the program. To the staff's surprise, teachers and students alike responded enthusiastically to this type of programming. Due to the overwhelming response, we decided to share our ideas and experiences with fellow interpreters who may find themselves in a similar situation. We also hope to inspire interpreters to conduct programs on topics which are often avoided when dealing with preschool groups.

Program Content--An Active Experience

In selecting activities for the program, we used the following three criteria: 1) Does this activity use one or more of the five senses? 2) Is the activity appropriate indoors as well as outdoors? 3) Is the activity one which our staff had never previously tried? Our research provided us with a wealth of possibilities from which to choose. A selection of the most popular activities follows.

1) *Introduction to Birds*: The program begins by distinguishing birds from other animals using a stuffed hawk. Children are challenged to describe distinguishing characteristics, including feathers, wings, hollow bones, beaks, claws, and anything else they come up with. An alternative introduction is an activity called "What Is A Bird" (Schueler, 1986), which uses a felt board and magazine cutouts of various animal body parts that are backed with felt. The children help the naturalist put together a bird, part by part. By eliminating other animal group characteristics, such as scaly skin, furry ears, and amphibious feet, children come to realize that birds have certain unique characteristics.

2) *Feather Fun* (*NatureScope*, 1985): The naturalist recites the following poem while the children act out the accompanying motions. This poem reinforces the fact that feathers are unique to birds and teaches the many functions that feathers serve.

Verse	Body Motion
I'm a little feather nub In a bird's skin.	Children crouch down with head between knees.
I'll grow and grow and grow Till I'm long and thin.	Children slowly stand up and reach toward the sky.
I keep birds warm	Children wrap arms around body.
And help them fly around.	Children hold arms straight out.
But one day I'll fall out, And go sailing to the ground.	Children slowly sway back and forth and gradually crouch down again.

3) *Bird Bop* (*NatureScope*, 1985): This circular dance provides children with a chance to move around while discovering that different birds move in different ways. We do the dance to the song *Cuckoo Rock* by Cathie Fink. Bird movements may include:

Hummingbird--do a figure eight with your arms.
Hawk--soar with your arms outspread.
Penguin--waddle with a side-to-side motion, holding your arms stiff at your side.
Duck--squat down and waddle while flapping your bent arms.
Crow or Blue jay--flap your arms as you walk.
Pigeon--walk while extending your head and neck back and forth.

These movements should first be practiced while standing in place. Also, children like to see the birds they are imitating, so pictures of the birds may be shown while teaching the movements.

4) *Sing Like A Bird:* Children are taught why birds may sing or call to each other. Next, they listen to a tape of songs and calls while gazing at the appropriate bird pictures. The tape may be paused after each call or song to allow children to imitate the bird sound. Another variation is to choose easily recognizable birds and let the children guess the appropriate sound before playing the tape. Our selection is specific to birds found in our park. We use the crow, chickadee, goose, duck, bobwhite quail, and goldfinch.

A follow-up activity is called *Singing With The Birds* (*NatureScope*, 1985). Children sing this song to the tune of *Old MacDonald's Farm*. They are shown a picture of the bird while they sing about it. Be sure to have extra copies printed for the teacher to take back to school! This is the version we sing:

Black-cap is a chickadee, E-I-E-I-O
She's as tiny as can be, E-I-E-I-O
With a dee-dee here and dee-dee there,
Here a dee, there a dee, everywhere a dee-dee,
Black-cap is a chickadee, E-I-E-I-O.

Bobwhite is a little quail, E-I-E-I-O
Round and plump and a short little tail, E-I-E-I-O
With a bobwhite here and a bobwhite there,
Here a bob, there a white, everywhere a bobwhite,
Bobwhite is a little quail, E-I-E-I-O.

Hunter is a great horned owl, E-I-E-I-O
Night is when he's on the prowl, E-I-E-I-O
With a hoot-hoot here and a hoot-hoot there,
Here a hoot, there a hoot, everywhere a hoot-hoot,
Hunter is a great horned owl, E-I-E-I-O.

Goldfinch is a yellow bird, E-I-E-I-O
Out in the meadow she can be heard, E-I-E-I-O,
With a potato chip here and a potato chip there,
Here a chip, there a chip, everywhere a potato chip,
Goldfinch is a yellow bird, E-I-E-I-O.

Once again, this song may be adapted to use birds specific to any site.

5) *Fill The Bill* (*NatureScope*, 1985): This active game demonstrates how different beaks are adapted for collecting different foods. We generally use four or five feeding stations, and at each station are four or five tools that represent different beaks. The *NatureScope* activity describes eight stations, but these are the ones we usually use.

Feeding Station	*Correct Bird Beak*
a) soil with plastic worms	wooden toaster tong to represent woodcock bill
b) water with floating Styrofoam peanuts (fish)	slotted spoon for pelican beak
c) bucket with red-colored water and large laminated paper flower on top of opening to bucket (a red tubular flower)	big plastic baster to represent hummingbird bill
d) a piece of bark or small log sprinkled with rice (insect larvae)	tweezers for nuthatch or warbler bill
e) water with floating grass or other vegetation (subaquatic vegetation)	metal canning tongs for duck bill

Children move in groups from station to station. They have a few minutes at each station to practice using all four or five beaks and to determine which beak is the best or most efficient food collector. After all the stations have been visited, the children tell the naturalist which beak is best for each station and are shown a picture of the real bird and beak represented.

6) *Watch the Birdie* (*NatureScope*, 1985): Children bring in two six-inch-long cardboard rolls. With the help of an adult, they tape the rolls side-by-side and punch a hole in each roll to which they attach a string necklace. These "binoculars" help the children to focus on one bird at a time during the next activity.

7) *Pishing and Squeaking* (Gibbs, 1986): Children learn how to make sounds which attract birds. To pish, they use their tongues to make "shushing" noises of varying lengths. To squeak, they make a fist and kiss the side of their hand. After practicing indoors, the children follow the naturalist outside and quietly pick a spot from which to call birds. They use their binoculars to watch each bird spotted or called in.

The preceding activities would easily take more than the hour we normally allot for a school program. Therefore, some of the activities may be deleted, and other favorites may be added. However, a naturalist must be sure to alternate slow. quiet activities with fast or active hands-on activities to ensure that he or she will hold the attention and interest of the group.

An Added Bonus--A Sensory Experience

As mentioned before, one of the criteria used in choosing an activity was that it should be sensory. We were originally unaware how sensory-oriented this program had actually become until some group leaders brought it to our attention. In retrospect, we now believe that this is a very important element to keep in mind when planning a program for younger children. In fact, a program need not be overtly sensory. Our program often uses the senses of sight, hearing, and touch, although the activities are not specifically sensory activities.

During the introduction, children have an opportunity to touch the stuffed hawk and to take a close look at a bird's body structure. If a mounted bird isn't available, feathers could be substituted. Sight and hearing are an integral part of *Sing Like a Bird*, since children listen to songs and calls while associating these sounds with the bird pictures. During the pishing and squeaking activity, children have an opportunity not only to create sounds attractive to birds but also to listen to the birds that often call back. While calling the birds in with these noises, *Watch The Birdie* gives children a different perspective as they gaze at birds. The cardboard binoculars enable children to focus their attention on one or two birds at a time rather than being distracted or overwhelmed by all of the activity happening outdoors; thus it sharpens their sense of sight.

Although other activities used in this program aren't sensory, they also are popular with young children because they encourage group participation and creativity through mimicry. *What Is A Bird?* promotes group participation and stimulates thinking while children have fun guessing which body parts don't belong to a bird. Actions performed to the feather poem help children vividly remember the growth and function of feathers. During the *Bird Bop*, children enjoy imitating wing and body movements of familiar birds. *Sing Like A Bird* not only provides sensory stimulation, but also gives children a chance to mimic bird calls and songs. Finally, *Fill The Bill* is an opportunity for children to mimic feeding behavior with different bill types.

Conclusion--Passing It On

We have provided you with a foundation of ideas which we hope will give you confidence and initiative to create and conduct your own bird programs for preschoolers. In addition, many of these ideas are easily adaptable to programs about other animals. We are confident that any of these activities will meet success and be sure to please the children, their leaders, your supervisors--but most importantly, You! Good luck and happy birding.

Postscript

We'd like to hear your success stories regarding bird programs with preschoolers. Please write to the address at the beginning of the paper. Also, we would like to thank the National Wildlife Federation's *NatureScope* staff for providing so many terrific ideas. Keep up the good work!

Bibliography

NatureScope: Birds, Birds, Birds!. 1985. Vol. 1, No. 4, National Wildlife Federation, Washington, DC, pp. 20, 29, 43, 52.

Meadowside Nature Center. 1986. Program prepared by Denise R. Gibbs.

Meadowside Nature Center. 1986. Program prepared by Sharon I. Schueler.

Improvisation and Adaptation:
Conducting Programs on an Unfinished Site

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Abstract

During new construction, renovation, or expansion you can carry on programs and even create new programs if you adapt your programs to fit your changed site. All interpreters are accustomed to adapting their programs to their participants. But often organizations or agencies find themselves undergoing new construction, renovation, or expansion. At the same time, new or ongoing programs must be created or continued. So, what do you do when your site has not been completed and your visitors are waiting at the front door? In other words, what kind of programs can you create and interpret in less than permanent or settled circumstances. Adapting your unfinished site to present programs is one alternative.

Site Adaptation

One solution for dealing with construction at your site is to treat the museum, nature center, or park like a bare stage. The site itself can be used as a "backdrop" or setting while artifacts, reproductions, animals, specimens, etc. can serve as the props. Interpretive programs can then be created to use these "props" and "backdrops" as springboards for the information and concepts you want to convey. In a sense, the interpreters and visitors are participating in a kind of improvisational theater. Although the following example is taken from history or social studies programs, the methodology is applicable to other subject material as well.

The Strecker Museum is in the process of reconstructing a late nineteenth century Texas river village, the Governor Bill and Vara Daniel Historic Village. The site and its twenty buildings will require extensive work until the buildings can be furnished and interpreted to the public. Since, however, the museum had managed to persuade the local school district to make the village a field trip location for its fourth and seventh grade students, a program had to be created which could occur during the reconstruction process.

Building Selection

First, two buildings were selected that were structurally sound enough to accommodate students: the general store and the schoolhouse. The general store had a bare floor and empty shelves; the schoolhouse had black boards (a "blackboard") on one wall. After sweeping out the cobwebs, a seedcase was placed in the store, and backless wooden benches and a teacher's desk were added to the schoolhouse.

General Store

After researching the items, prices, and brands of merchandise that were common in the time period and place, a few representative artifacts were placed on the empty shelves and counter. Combining these props with the knowledge of whether or not goods were sold on credit, or the mail was picked up there, allow the interpreters to help the students envision the store, its merchandise, and what it was used for, and the customers and what the store meant to them. Weighing, wrapping (with brown paper and string), and figuring the cost of beans with pencil and paper emphasize the differences between contemporary grocery shopping and the general store.

Schoolhouse

In the schoolhouse, the benches were combined with reproduction slates, chalk, and rags along with fourth-grade McGuffey readers. This allows students to do lessons that research indicated were appropriate to the time period and locale. Students gain a new appreciation of pencils, pens, and notebook paper after learning to write in a different script (alphabet) and by doing arithmetic on the slates held on their laps. In addition, lively discussions occur when students begin trying to locate a cafeteria, water fountains, lockers, and rest rooms in a 16' x 16' room.

In addition to the two buildings, a walk around the Village, which is located on the river bank, serves as orientation to the site and an opportunity to discuss settlement, historic development and transportation patterns, geography, and landscape. Partially completed exhibit cases or other building also lend themselves to the orientation using historic photos, maps, and artifacts.

Improvisation

Finally, interpreters take advantage of everyday occurrences. For example, when everyone was sweltering in the schoolhouse during hot and humid weather, the interpreters incorporate that into the program. Conversely, when a northern storm blew through, coal stoves and a long walk to school on unpaved roads took on a new significance. Chickens living in the potato shed provided a springboard for discussing everyday chores for children.

In short, two empty buildings, a few artifacts and reproductions, a great deal of research, and imagination can make a one-and-one-half hour visit seem far too short.

90 Days and Counting...
Program Planning Using the Panda Model

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Abstract

When the San Diego Zoo accepted the invitation of the Fuzhou Zoo to exhibit pandas, it provided us with both a tremendous opportunity and challenge. The opportunity: a rare chance to capture and focus the attention of literally millions of visitors on the plight of pandas and other endangered Chinese wildlife. The challenge: an unprecedented, compressed time line that pushed us to the limits of our own resources and forced us to reach out to others who would help us achieve our objectives. This paper will discuss how the San Diego Zoo forged new relationships--local, national, and international--and called on established ones to maximize the educational opportunities afforded us by the pandas' visit. It will suggest how this market-driven approach to program planning and development might be applied to interpretation at similar sites.

An Opportunity...and a Challenge

When the San Diego Zoo decided to display pandas, we wanted to fully justify the exhibition of this highly endangered species by extending the pandas' conservation message to as many people as possible in the few months of the animals' visit. This unrivaled opportunity--to capture and focus the attention of millions of visitors on the plight of pandas and other endangered Chinese wildlife--came with a challenge: we had 90 days from the first rumor of their coming until their actual arrival. Our desire to maximize a limited but extremely valuable educational opportunity, coupled with an unprecedented, compressed time line, pushed us to the limits of our own resources and forced us to reach out to others to achieve our ambitious objectives. The purpose of this paper is to share the approach we used to plan for the educational experience afforded by the pandas' visit to our zoo in the hope that it may have application to similar projects undertaken by other interpretive sites.

Laying the Groundwork: A Market-driven Program Process

It's said that luck is when preparedness meets opportunity. As luck would have it, our education team was well prepared (is anyone ever well prepared for pandas?) to take on the panda challenge. We had just completed a departmental redesign which resulted in assigning staff to three minidivisions aligned with our three main target markets: general public, school and youth, and adult. This arrangement allowed individuals or small teams within our staff to focus on the needs of specific learner groups. Key outside contacts were identified within these three groups and we began networking with them. By working harder to get "close to the customer" and to involve key market contacts in our program development process, we were ensuring the success of our programs. We became more productive by not wasting time creating programs in a vacuum.

We had also just adopted a formalized, market-driven *Program Selection and Development Process.* While the system I'm about to describe is our own unique creation, you may recognize similar step-by-step approaches designed to produce "market-driven" results borrowed from other fields.

The first step in this systematic process is a *Needs Assessment.* Because our strategy is to remain "close to the customer," this step is really a continuous process. We provide our learner groups with a variety of channels--both formal and informal--to offer us continuous feedback. We also conduct internal research during this phase to help corroborate our findings about the market. For example, we might check with our membership or marketing departments to see if their data--membership surveys, exit interviews of visitors, etc.--supports the information we've collected.

In the *Conceptual Phase*, a staff member assumes the role of "product champion" and develops a program concept to meet identified needs. "Product champions" are required to draft a formal concept proposal, providing a description or "scenario" of the proposed program. The scenario describes in sequential detail what the experience will be like for the participant. The concept proposal also outlines the main theme messages of the program and identifies goals and objectives. A representative group from the target market is identified and called together to respond to the concept proposal. Often, two or three scenarios are drafted and, using "focus-group" technology, the group is asked to select the program scenario they feel is most desirable.

Once the projected costs and benefits of the program have been reviewed internally and the concept proposal approved, we launch into *Program Design/Development.* The representative group from the target market reappears again in the latter part of this phase to help us pilot test the program. Based on their recommendations, the program is modified before it's promoted to our learners at large. We also work closely with key market contacts in this phase to develop a promotion and/or communication plan for the program. Their involvement in the prior phases results in a strong feeling of investment and ownership of our programs. This pays off in valuable dividends for us during the promotion phase. The positive "word of mouth" spread by these often influential market representatives has been extremely effective in promoting "their'" programs.

The real moment of truth occurs during the *Implementation and Evaluation Phase.* Because we've developed a relationship with our markets that is based on close and frequent communication, we're able to get quick and candid formative evaluation. This helps us conduct "course corrections" promptly and, hopefully, avoid program "crashes."

Putting the Process and People to Work: The Panda Plan

The groundwork I've described positioned us to quickly and effectively deploy staff and marshal community resources. We were able to identify those key individuals, community organizations, and institutions who could be most helpful in assisting us. This network of "outsiders" advised us on not only the needs of their constituents, but on the mechanics of delivery and the channels of distribution that would best leverage our ability to rapidly communicate with our markets. By capitalizing on this network, we were able to mount a multifaceted educational campaign in the brief time period prior to the pandas' arrival. Our ability to respond quickly with accurate and appropriate programming enabled us to meet our goal of reaching as many people as possible in the short time available to us.

Our first task was to prioritize which programs and target learners we would need to plan for first. Since the pandas were scheduled to arrive in the middle of our peak season, our first concern was to have an informal program in place to capitalize on the swells of summer visitors. Next, we would concentrate on formal programs for adults, especially Zoological Society members, and finally, school groups, who would not begin visiting the Zoo to see pandas until the fall.

Our plan for the general public was designed not only as a means of presenting important messages about pandas to our visitors, but also to provide entertainment while visitors waited in long queues and to regulate stay time at the exhibit itself. The educational experience consisted of three elements: on-grounds video, narration at the exhibit, and interpretive graphic panels purchased from the San Francisco Zoo. The cooperation of the San Francisco Zoo in allowing us to purchase these excellent panels saved us hundreds of hours of research and writing; hours which we could then apply to the realization of other plan components.

Three formal programs addressed the needs of members, adults, and families: the popular *Beasts of the East* guided behind-the-scenes tour of Chinese animals, in-depth courses of Chinese wildlife, and an internationally known speakers' series culminating with noted panda researcher George Schaller. We worked closely with our membership and development departments to meet the needs of our many members. And we called on outside colleagues for fresh ideas in this area, too. One colleague described the successful program he designed for underwriters of the golden monkeys during their visit to the Woodland Park Zoo, which led us to design special "preview" tours for our donors.

With member programming just underway, one of our corporate sponsors generously volunteered to extend the panda experience to senior citizens and disabled or disadvantaged children and their families--with a less-than-generous 20-day lead time. The donor requested that the beneficiaries of the project spend a memorable day visiting the pandas, a day which included bus transportation to and from the Zoo, lunch, an educational experience appropriate to the mental and physical capacity of the learners, and a gift to take home.

But only 2,300 people could participate in the day-long program during the month targeted for the project. We were at a complete loss as to how to choose the participants in an equitable and timely manner. Fortunately, we were rescued again by our extensive community contact network, when leaders from senior citizen, youth, disabled, and religious organizations volunteered to identify and select the 2,300 beneficiaries for us.

By far the largest support group involved in our panda planning was the task force selected to maximize the once-in-a-lifetime educational opportunity we could provide to schools. Thirty strong, this group was comprised of high-level school administrators, curriculum specialists, and educators. Working closely with these contacts, we developed a menu of educational programs to coincide with the visit of the giant pandas.

The menu had three components: *Pandarobics*, a 20-minute on-grounds program that educated students on how and why pandas are trained; *Wildlife Treasures*, an outreach assembly program focusing on animal treasures of different nations, with a special emphasis on Chinese wildlife; and the *Panda Education Packet*, an extensive curriculum unit on the giant panda and other Chinese animals.

Task force educators and curriculum specialists researched and wrote some of the curriculum packet for us. Other work sheets were contributed by the Bronx Zoo's Education Department. Administrators on the task force made sure that the packet and programs they helped to create received top billing and extensive penetration into the schools, which resulted in thousands of students having a meaningful, educational panda experience.

A support group much smaller in size, but critically important to us, were the Chinese trainers and veterinarian who accompanied the pandas during their stay. The Chinese place a very high value on both children and education. Despite communication difficulties, they were eager to accommodate our requests and cooperate with us in whatever way they could to help people, especially children, learn from their panda experience. In return, we shared with them some of the philosophy, methods, and materials we use to teach people about conservation.

Perpetuating the Plan: Reinvesting to Reap Conservation Dividends

The Comprehensive Panda Education Project became one of the most ambitious projects ever undertaken by the San Diego Zoo's Education Department. It represents months of work by our own staff, and days and hours contributed by other individuals and groups who came to our assistance. This tremendous investment of effort most likely will not be recycled for future use at our zoo. We hope that by sharing this information, we will multiply our own efforts to capture and focus the attention of millions of people on ecological concerns which might be treated at other interpretive sites.

Bibliography

Harvey, Pegi S., et. al. 1987. *Program Selection and Development Guidelines: A Manual for Education Staff.* Unpublished.

Leone, Michael and McCarthy, Susan. 1986. *An Assessment of Present Needs, Objectives and Three-Year Strategic Plan.* Unpublished marketing study prepared for the Zoological Society of San Diego's Education Department.

Peters, Thomas J. and Waterman, Robert H., Jr. 1982. *In Search of Excellence.* Harper and Row, New York.

Interpretation Training: Quick and Effective

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Abstract

Interpretation skills training can be both short and effective. The interpretation staff at The Children's Museum of Indianapolis has developed an effective three-and-a-half hour workshop to train volunteers and staff in interpretation techniques. The workshop uses a very interactive format to introduce educational objectives for an informal learning environment, body language skills, and questioning techniques to be used with the visitors.

The format can be applied to interpreters of all content areas from natural science, to history, to anthropology because interpreters in all of these areas require the same basic skills. The staff at the museum has successfully used this workshop to train adults and youth (ages 10-16). One of the unique things about the workshop is that it builds on the trainees experience and knowledge so that they actually teach themselves good interpretation techniques.

This workshop may generate some time-saving methods that would be attractive to supervisors of seasonal workers, volunteers, and tourist industry interpreters who have limited time to train these often temporary front-line interpreters.

Introduction

The museum staff trains about 80 adult volunteers and 160 youth volunteers a year. Each adult commits to eight hours a month for one year, and each youth agrees to work in one gallery for six months. Lengthy interpretation training would not serve the needs of either of these groups, for following the training they each have to participate in additional content training for 15-20 hours. This workshop is the result of wanting to serve our volunteers and staff in the most time efficient manner, but still give the volunteers the information they need to work effectively with the visitors.

The museum's interpretation staff dissected what skills a good interpreter needs to effectively communicate. Three main ideas emerged: 1) what is learning in a museum (an informal) environment?; 2) how do you approach people and how do you know who to talk to?; and 3) how can you communicate your message in an interesting, interactive, and engaging way? Answering these questions became the goal of the workshop.

The presentation techniques used in the workshop were also carefully chosen to reflect the teaching techniques that we wanted the volunteers to use with the visitors. As many supervisors realize, the trainees learn by example. Thus a lecture format could not be used--our workshop, just as their interpretation, had to be interesting, interactive, and engaging.

We had to trust the trainees to have enough experience and information from other parts of their lives to be active contributors to the workshop. And we have been pleasantly rewarded for our trust. They have taught themselves better than any lecture we could have prepared. Even the youths we train have instinctively known enough to be major contributors to the workshop. One volunteer, a junior high teacher for many years, thanked us after the workshop for reminding and reinspiring her to actively involve her students in both the teaching and learning.

Introduction to Interpretation Workshop Outline

Objectives

1) To introduce participants to the difference between formal school learning and the informal learning provided by a museum.

2) To study body language to gain an awareness of the messages we send, as well as those sent by our visitors.

3) To begin development of inquiry techniques as a communication method for engaging the visitor.

Schedule (For a group of 30)

15 minutes	Introduction and Arrival
30 minutes	Ice Breaker Activity to allow participants to become familiar with each other and comfortable enough to participate in the other activities.
45 minutes	*Teach Us...*--Small groups plan to "teach" the rest of the group a concept in three minutes or less. After presentation, discuss characteristics of formal education, characteristics of informal education, characteristics of a museum learner, and what learning should be like in the museum.
15 minutes	Break
25 minutes	*Body Language Charades*--In small groups, mime various messages that museum visitors and interpreters send. Discuss the main messages sent through posture, gestures, and facial expressions.
75 minutes	*Ask an Object*--In pairs develop questions about an object or artifact, and then ask questions of group as if leading an interpretative interaction.
5 minutes	Conclusion and what comes next.

Teach Us...

This activity lets the participants present and face their preconceived notions of what teaching is. Divide participants into small groups of six. Assign each group a topic to "teach" the rest of the groups. Do not explain *Teach Us*, leave it to them to define and decide how to implement it. The topics can represent your content areas, for instance: "Nature is all around you," "History is fun," or "What is in your environment affects your life." Give the groups 10 to 15 minutes to plan how to teach their concept.

Give each group three minutes to "teach" the rest of the groups their concept. The facilitator and the rest of the group should take notes on the techniques they used--both good and bad. After each presentation share some general remarks as to what was most effective. When all groups have taught, lead a whole group discussion of teaching techniques that were demonstrated. Generate a written list of characteristics of museum learners (who are they?) and a list of what learning in a museum ought to be (how are we different from formal educational situations like a class?). The last list should be one of effective interpretation techniques that accomplish the learning. The participants should now have altered their view of what "teaching" is.

The supplies you need are: index cards with topics to teach, a large pad of paper or chalkboard, marker or chalk, a learning pyramid, and questions that will help them develop interpretation techniques further.

Body Language Charades

Here is a chance for the participants to move about and actually practice both good and bad body language. We all read body language everyday, but we often don't stop to think about it. This activity asks the participants to consciously create a message that as interpreters they will see and use daily. Divide the participants into small groups of five or six. Give each group a box with slips of paper. Each slip should have a body message written on it. Have each member of the group pick a slip and then act out the message for the rest of their group to guess. After all slips have been acted out, the facilitator should discuss with the whole group the implications of body language and eye contact and the need to control these.

Some examples of body messages to act out are: "I'm bored," "Don't bother me," "I like what I am doing," "I want you to talk to me," "May I ask a question?" "Enthusiasm," "You can't go in there," "I can't believe you are so dumb as to say that," "I'm mad," "I'm in my own world," "I don't trust you," "I'm interested in what you are saying," "This is a secret," "I'm nervous," "This is important," "I'm in a hurry," "I'm boss here," and "I don't want you to talk to me."

You will need the following supplies: small pieces of paper with messages, five boxes to hold them, and written information on body language that can be read at home.

Ask an Object

The main job of an interpreter is to explain. But explaining does not mean lecturing. Communication should be interesting, interactive, and engaging. One of the main ways to accomplish this is by using inquiry techniques or questioning. Handouts on inquiry techniques can be excerpted from "Creative Museum Methods and Educational Techniques" by Jeanette Booth, Gerald Kroekover, and Paula R. Woods.

Begin the activity with a short discussion of the different levels of questioning. The review should cover narrow questions that ask the visitor to give yes-no, recollection, definition, or explanation answers. Then encourage them to look for broad questions that ask them to reconstruct how this was used, theorize on who used it, or judge what impact this had. After this discussion, demonstrate a short interpretative interaction using questions, then redemonstrate it without questions. Discuss the differences between the two demonstrations.

Divide the group into pairs, pass out an object or artifact to each couple, and instruct them to figure out what it is. Give them 5-10 minutes to examine object and try to guess what it is. Then tell each pair what it is that they have. Ask them to formulate a series of questions that they could ask another couple to lead them to discover what the object is.

After about 10 minutes divide the group in half. Instruct each pair to question the other individuals for about three minutes, leading them to a discovery of the object's identity. Remind them to use good body language and the good interpretative techniques identified earlier. They should also keep notes on which techniques worked best for a discussion at the end.

At the conclusion of the presentations, the facilitator should lead the whole group in a discussion of what worked well. Encourage the participants to always look for questions to teach with rather than taking the easy route of lecturing.

Supplies you will need are: paper for writing questions and taking notes, pencils, 15 objects whose purpose or use is not easily identified, and handouts for them to further explore inquiry techniques.

Workshop Conclusion

During the conclusion to the workshop, review the things the participants have learned. The facilitator should compliment the participants for teaching themselves and let them know about their future training. Pass out an evaluation form; these participants will be happy to tell you what they thought of the workshop and what could be done to improve it.

Workshop Effectiveness

It is obvious that this is not all the training one needs to be a good interpreter. The volunteers or staff need exposure to the museum or site they are to work at. They also need content information. However, this is a good introduction that will get them started speaking in front of groups and interpreting objects. Here are a few remarks from participants' evaluations.

- The course very effectively creates interest and enthusiasm for everyone. Exciting and inventive.
- It was informative and interesting.
- I usually learn by hearing and seeing. It was interesting to learn by teaching. You must always be willing to learn even as a teacher.
- This was so much better than a lecture presentation.
- Each segment gave me some new insight. I learn each time I participate.
- We covered each area thoroughly and I felt comfortable moving on to the next topic.
- Everything presented was most useful. I can't say a single thing was less useful.
- I wasn't excited about sitting for three hours but time passed quickly because of the interesting way it was presented.
- Very informative; it made you relax and believe you can do it.

Even after three months of working as interpreters, the volunteers commented that the session was very helpful. "Working with the artifacts in front of the entire training group was good--doing anything in front of people helped overcome nervousness--the more people the better." With this kind of feedback we continue to use this workshop and it contributes to the effective interpretation presented in our galleries.

Interpretive Services on Wildlife Refuges: A Market Survey of Californians' Preferences

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Abstract

A market survey of 2,526 California residents was conducted in 1987 to identify Californians' preferences for various interpretive services and facilities at state wildlife refuges and management areas. An overwhelming 96.4 percent of the sample felt that the California Department of Fish and Game should be educating the public about fish and wildlife.

Respondents were asked about the kinds of interpretive services and facilities that would make them more interested in going to state wildlife refuges and management areas. The most important services and facilities included maps and checklists, self-guiding trails, educational presentations, and paths, trails and platforms. Less important services and facilities included information centers and displays, demonstrations of wildlife management techniques, informational books and materials, guided tours, and equipment rental.

Respondents were segmented into consumptive and nonconsumptive user groups. Different user groups demonstrated definite preferences for specific interpretive services and facilities.

The research was conducted as a cooperative project of the California Department of Fish and Game and the Survey Research Center at California State University, Chico.

Introduction

Historically, wildlife managers have tended to cater primarily to the needs of consumptive wildlife users. This has been partially due to the fact that hunters and anglers have provided most of the money for wildlife management through license fees, fines, and excise taxes on equipment and accessories. It has also been due to the perception shared by some wildlife managers that consumptive users represent the predominant users of wildlife resources. Finally, the tendency of managers to cater to consumptive users can be attributed to the fact that well-organized consumptive user groups have played a very active role in wildlife management programs and thereby have made wildlife managers more aware of their needs and preferences.

However, wildlife management has changed in a number of ways in recent years. First of all, the funding base for wildlife programs has been slowly changing. For example, the California Department of Fish and Game historically received almost all of its revenue from hunters and anglers. Today, about 20 percent of the department's budget comes from general sources, such as the state's general fund, rather than sources linked to special user groups (Wolfe, 1988). Such changes in funding are usually driven by the need for wildlife agencies to broaden their income sources, especially with respect to nongame management programs. At least one study shows that user groups, as well as professionals, support such changes. Witter and Shaw (1979) showed that birders, hunters, and wildlife professionals all believed that the major part of nongame management funds should be from sources other than hunting and fishing licenses and fees. As the funding base changes and hunters and anglers pick up less of the cost of managing wildlife, wildlife managers will have to alter the services and products offered to better meet the needs of a more diverse clientele.

Another factor affecting wildlife management relates to the changing nature of wildlife recreation. Schick et. al. (1976: 65) stated that "While participation in hunting may be on the decline, the number of non-consumptive users of wildlife is rising." A growing body of research is showing the significance of nonconsumptive use of wildlife for Americans (Kellert, 1978, 1980; Shaw and King, 1980; Lyons, 1982; Duda, 1987). In fact, the 1980 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation showed that 83.2 million Americans aged 16 years and older participated in nonconsumptive wildlife-associated activities, while only 42.1 million fished and 17.4 million hunted (Fish and Wildlife Service, 1982). Furthermore, the same study reported that 65 percent of hunters and anglers engaged in some type of nonconsumptive activity.

A final factor changing wildlife management in recent years relates to the types of special interest groups exerting pressure on wildlife managers. Groups aligned solely with nonconsumptive uses of wildlife, such as birdwatchers, have become more actively and openly concerned with wildlife management policies and therefore are having a greater influence (Hendee, 1969; Thomas and DeGraaf, 1973; Shaw, 1979). In the past, such groups were usually considered an elitist and esoteric minority (Duda, 1987).

The changes noted above should make clear that today's wildlife managers serve a broader-based clientele than in the past. Managers must provide services and products that appeal to nonconsumptive as well as consumptive users if they want to develop broader political and financial support (Schick et. al. 1976). This creates a need for managers to reassess their "market" in order to develop new marketing strategies that better meet the needs of their clientele groups.

One of the keys to developing an effective marketing strategy is understanding how various user groups perceive and react to specific products and services (More, 1983). With this in mind, a wildlife market survey was conducted by the Survey Research Center at California State University, Chico. The telephone survey polled a representative sample of California residents on a variety of wildlife-related issues. This paper reports the portion of the survey that was concerned with identifying the nature of consumptive and nonconsumptive use of fish and wildlife resources in California as well as determining various user group preferences for specific interpretive facilities and services at state wildlife refuges and management areas.

Methods

Survey data were collected through telephone interviews. The interview schedule was developed by the California Department of Fish and Game (CDFG) staff in consultation with researchers from the Department of Recreation and Parks Management and the Survey Research Center at California State University, Chico. After pretesting and revision, the final interview schedule was split into two forms to keep interview times to about 10 minutes. A total of 1,259 (49.8 percent) of the respondents received Form A and 1,267 (50.2 percent) received Form B. Respondents who reported spending no leisure time outdoors (457 or 18.1 percent of the sample) or who reported no wildlife-related activities were asked a smaller subset of questions.

The population sampled in this survey was all persons age 18 and above living in households with telephones in the State of California. Therefore, this study focused on the adult population of California. Approximately 95 percent of all California households have a telephone. A random digit telephone sample was purchased from Survey Sampling, Inc. of Westport, Connecticut.

Altogether, 9,983 households were called from May 23 through June 6, 1987. Since the phone numbers were randomly generated, many were not in service, some were nonresidences, and some were not answered. Numbers not answered were called up to two more times at different hours and days before excluding them. Usable interviews were completed with 25.3 percent (2,526) of the households called. This completion rate is at the upper end of the range for general population household telephone surveys (Gregg, 1988).

Potential sources of error in the survey included biased question wording, interviewer behavior, external events in the population being surveyed, and inadequate sample selection procedures. These error sources were minimized by pretesting and consultation to reduce question bias, using experienced and well-briefed interviewers in a supervised interviewing facility, conducting the survey in as short a time as feasible (15 days), and using a sample generated by an experienced and reputable source.

Results

Demographics of the Respondents

The age distribution of the sample of 2,526 Californians was very similar to that of the Census of the U.S. Population. As shown in Table 1, the largest age groups were 25-34 years of age and 35-44 years of age. The gender of the respondents was almost evenly divided. There were 1,222 male (48.4 percent of the sample) and 1,304 female (51.6 percent of the sample) respondents.

Most survey respondents (91.0 percent) had at least completed high school and 29.1 percent held a college degree (Table 1). More than sixty percent had household incomes of $30,000 or more per year, and only 12.0 percent had incomes of less than $15,000 annually. Household income levels found in this survey approximate those of recent California market estimates (Gregg, 1988).

A total of 80.0 percent of the respondents were white, 7.9 percent were Hispanic, 5.2 percent were black, and 3.9 percent were of Asian-Pacific ethnic origin. The sample underrepresents minority populations in California. Reasons for this include a slightly lower percent of minority households with telephones, more persons per household in minority populations, and a language barrier, particularly in Hispanic and Asian households.

Segmentation of Respondents

Segmentation of the sample on the basis of the amount of leisure time spent outdoors and participation in fish and wildlife-related recreation activities is shown in Figure 1. Analysis of responses to survey questions by each of these groups revealed certain similarities and differences. First, a larger percentage of nonusers, capital intensive facility users, organized sports-oriented outdoor recreationists, capital intensive outdoor recreationists, and nonconsumptive fish and wildlife recreationists were female. In contrast, the mixed and purely consumptive fish and wildlife recreationists were mostly males. Second, a large percentage of nonusers were in the lower income brackets. In contrast, most nonconsumptive users were in the higher income brackets. Third, nonconsumptive users and mixed users had completed more years of education than nonusers and pure consumptive users. Fourth, nonusers appeared to be a much older group than users of fish and wildlife.

Fish and Wildlife Recreation Use Patterns

All respondents were asked whether they had made any visits to zoos, aquariums, natural history museums, nature centers, or wildlife parks in the past year. A total of 1,718 (68.0 percent of the sample) indicated that they had made one or more visits, while 807 (31.9 percent) indicated that they had not. Of the 1,718 who had made a visit, 1,190 (69.3 percent) said that their visits had been made on more than one or two days during the year.

Of the 2,069 respondents who spend some or most of their leisure time outdoors, 729 (35.2 percent) had photographed wildlife or wildflowers during the past year. Of these 729, 484 (66.4 percent) had spent more than one or two days photographing wildlife or wildflowers. A total of 506 (24.5 percent) had birdwatched. Of these, 373 (73.7 percent) stated that they spent more than one or two days birdwatching during the past year.

A total of 1,041 (50.3 percent) of the 2,069 respondents who spend some or most of their leisure time outdoors indicated that they participated in feeding or attracting birds or other wildlife during the past year. Of the 2,069 users of wildlife, 849 (41.0 percent) indicated that they had visited a natural outdoor area to see birds or wildlife during the past year.

Overall patterns of participation in nonconsumptive fish and wildlife activities by both mixed and nonconsumptive users are summarized in Table 2. Although use patterns were very similar for the two groups, participation by nonconsumptive users was slightly higher than mixed users.

All of the 2,526 survey respondents were asked if they had visited a wildlife refuge or management area operated by the California Department of Fish and Game during the past year; 655 (25.9 percent) reported making such a visit. However, 208 (31.8 percent) of the 655 visitors could not give the name of the area, and another 367 (56.0 percent) gave names of areas that are not California Department of Fish and Game areas. Only 80 (12 percent) of the respondents could identify the names of specific CDFG areas that they had visited.

Preferences for Interpretive Services

Survey respondents who participate in some type of wildlife-related activity were asked if the Department of Fish and Game should be educating the public about fish and wildlife. Of the 954 respondents who were asked the question on Form A, most (96.2 percent) said "yes," while only 31 (3.2 percent) said "no." Only five respondents had no opinion on the question. Crosstabulations between consumptive users (those users in the mixed and pure consumptive categories) and nonconsumptive wildlife users (those users who participate only in nonconsumptive activities) revealed no significant differences between opinions of these groups ($p > .05$).

All of the respondents who spend some or most of their leisure time outdoors and who participate in some type of wildlife-related recreation activity were asked how important certain interpretive facilities and services were to making a visit to a wildlife refuge or management area more attractive. Overall, more than half of the wildlife recreationists indicated that (1) maps and checklists and (2) self-guiding trails were very important to making a visit more attractive (Table 3). Almost half rated educational presentations and paths, trails, and platforms as very important. Information centers and displays, demonstrations of wildlife management techniques, informational books and materials, guided tours, and equipment rental were all rated as less important.

Specific wildlife user groups' preferences for various interpretive services and facilities were also analyzed. The results are reported in Table 4 through Table 9. More than half of the birdwatchers indicated that maps and checklists, self-guiding trails, educational presentations, paths, trails, and observation platforms would be very important to an enjoyable visit to a wildlife refuge or management area (Table 4). However, only the important ratings of birdwatchers for educational presentations were significantly different from other wildlife consumers ($p = .0035$). In addition, about 45 percent of the birdwatchers indicated that information centers and displays and demonstrations of wildlife management techniques would be very important to an enjoyable visit. The importance ratings for these two interpretive services by birdwatchers were significantly greater than other wildlife users (Table 4).

More than half of the wildlife photographers said that maps and checklists, self-guiding trails, educational presentations, paths, trails, and observation platforms would be very important to an enjoyable visit to a wildlife refuge or management area (Table 5). In addition, more than 40 percent indicated that information centers and displays, demonstrations of wildlife management techniques, and informational books and materials would be very important to their visit to a wildlife area. Importance ratings by photographers on information books and materials, and on demonstrations of wildlife management techniques were significantly higher than other wildlife users.

A total of 60.9 percent of the persons who attract and feed wildlife at home indicated that maps and checklists would be very important to an enjoyable experience at a wildlife refuge or management area (Table 6). In addition, 52.0 percent indicated that self-guiding trails would be very important. More than 40 percent said that; (1) educational presentations, (2) paths, trails, and platforms, (3) information centers and displays, and (4) demonstrations of wildlife management techniques were very important. However, only the importance ratings on demonstrations of wildlife management techniques were significantly higher for wildlife attractors than for other wildlife users.

Persons who visit wildlife areas expressed preferences for interpretive services which are similar to those of other nonconsumptive wildlife users. More than 50 percent of this group indicated that maps and checklists, self-guiding trails, and educational presentations would be very important to an enjoyable visit to a wildlife refuge or management area. The importance ratings by visitors on each of these interpretive services were significantly higher than other wildlife users. In addition, more than 40 percent indicated that paths, trails and observation platforms, information centers and displays, and demonstrations of wildlife management techniques are very important (Table 7).

Like nonconsumptive wildlife groups, more than 50 percent of the hunters indicated that maps and checklists would be very important to an enjoyable visit to a wildlife refuge or management area (Table 8). In addition, more than 40 percent said that educational presentations and demonstrations of wildlife management techniques would be very important. Overall, importance ratings by hunters were significantly lower than ratings by other wildlife users on six of the nine interpretive services and facilities.

Like hunters, anglers ranked maps and checklists as the most important interpretive service at wildlife refuges and management areas (Table 9). In addition, more than 40 percent of the anglers rated educational presentations and demonstrations of wildlife management techniques as very important to an enjoyable visit. Only importance ratings on demonstrations of wildlife management techniques by anglers were significantly higher than those of other wildlife consumers.

Discussion

Study results indicate that many Californians enjoy wildlife from a nonconsumptive perspective. The most popular nonconsumptive activities include visits to zoos and other developed wildlife facilities, birdwatching, and feeding or attracting birds or other wildlife around homes. Visiting natural outdoor areas specifically to see birds or wildlife is also quite popular.

While more than a third of Californians enjoy the consumptive activities of hunting and/or fishing, very few (2.9 percent) are pure consumptive users of wildlife. This percent may underestimate the true proportion of such users in California with respect to the total population, however. This is due to the fact that persons under 18 years of age were not sampled in this study and some recent research indicates that persons under the age of 18 tend to be more consumptive in their uses of wildlife than the adult population (Jackson and Norton, 1980).

Californians overwhelmingly want the California Department of Fish and Game to be involved in educating people about fish and wildlife. Interpretive services and facilities at wildlife refuges and management areas are one means of providing education. The data on interpretive services and facilities show that a majority of all wildlife consumers believe that maps and checklists are important to an enjoyable visit to wildlife refuges and management areas. Almost half of the people in all six groups favor educational presentations and demonstrations of wildlife management techniques. However, more nonconsumptive users rate (1) self-guiding trails, (2) paths, trails, and observation platforms, and (3) information centers and displays as more important than do hunters and anglers.

In general, Californians primarily preferred those services and facilities that are self-directed and allow for first-hand learning experiences in the field. Three of the top four rated services and facilities (maps and checklists; self-guiding trails; and paths, trails, and observation platforms) were of an "unattended" nature; in other words, they don't require that a "live" interpreter be present. Further research is warranted to determine the causal factors behind such preferences.

Acknowledgements

The authors would like to thank Director Pete Bontadelli, Ms. Sandra Wolfe, and the staff of the California Department of Fish and Game for their cooperation in the conduct and funding of this project. We would also like to thank Dr. Jim Gregg, Dr. Mike King, and Dr. Jon Ebling of the Survey Research Center, California State University, Chico, for their work in developing, pretesting, and administering the survey.

Bibliography

Duda, M.D. 1987. Public Opinion Toward Environmental Protection and Wildlife Conservation: A Focus on Florida. *Hum. Dimensions in Wildl. Nwsl.* 6(2):12-16.

Fish and Wildlife Service. 1982. *1980 National Survey of Fishing, Hunting, and Wildlife-associated Recreation.* U.S. Dept. Interior, Washington, D.C. 156pp.

Gregg, J. 1988. Personal communication. Survey Research Center, California State University, Chico, California.

Hendee, J.C. 1969. Appreciative Versus Consumptive Uses of Wildlife Refuges: Studies of Who Gets What and Trends in Use. *Trans. N. Am. Wildl. and Nat. Resour. Conf.* 34: 252-264.

Jackson, R. and R. Norton. 1980. Phases, the Personal Evolution of the Sport Hunter. *Wisc. Sports.* 9(6):17-20.

Kellert, S.R. 1978. Characteristics and Attitudes of Hunters and Anti-hunters. *Trans. N. Am. Wildl. and Nat. Resour. Conf.* 43:412-423.

_____. 1980. Public Attitudes, Knowledge and Behaviors Toward Wildlife and Natural Habitats. *Trans. N. Am. Wildl. and Nat. Resour. Conf.* 45:111-124.

Lyons, J.R. 1982. Nonconsumptive Wildlife-associated Recreation in the U.S.: Identifying the Other Constituency. *Trans. N. Am. Wildl. and Nat. Resour. Conf.* 47:686-692.

More, M.E. 1983. A Guide to Effective Interpretation--What the Forest Service Can Learn from Marketing Research. U.S. Dep. Agr., For. Serv., Washington, D.C. 49pp.

Schick, B.A., T.A. More, R.M. DeGraaf and D.E. Samuel. 1976. Marketing Wildlife Management. *Wildl. Soc. Bull.* 4(2):64-68.

Shaw, W.W. 1979. Current Research on Esthetic Values of Wildlife. Pages 27-31 in T.C. Daniel, E.H. Zube, and B.L. Driver, Tech. Coord. *Assessing Amenity Resource Values.* U.S. Dep. Agr., For. Serv. Gen. Tech. Rep. RM-68.

Shaw, W. and D. King. 1980. Wildlife Management and Nonhunting Wildlife Enthusiasts. *Trans. N. Am. Wildl. and Nat. Resour. Conf.* 45:219-225.

Thomas, J.W. and R.M. DeGraaf. 1973. *Non-game Wildlife Research in Megalopolis: The Forest Service Program.* U.S. Dep. Agr. For. Serv. Gen. Tech. Rep. NE-4. Northeastern For. Exp. Stn., Upper Darby, PA. 12pp.

Witter, D.J. and W.W. Shaw. 1979. Beliefs of Birders, Hunters, and Wildlife Professionals about Wildlife Management. *Trans. N. Am. Wildl. and Nat. Resour. Conf.* 44:298-305.

Wolfe, S. 1988. Personal communication. California Department of Fish and Game, Sacramento, California.

Table 1. Demographic characteristics of the survey respondents.

Characteristic	*Number*	*Percent*
Age		
18-24	321	12.8%
25-34	660	26.2%
35-44	557	22.1%
45-54	345	13.7%
55-64	305	12.1%
65 and over	329	13.1%

Table 1. Continued

Characteristic	*Number*	*Percent*
Sex		
Male	1222	48.4%
Female	1304	51.6%
Education Completed		
Grades 1-7	20	0.8%
Completed Grade 8	32	1.3%
Some High School	174	6.9%
High School Graduate	685	27.2%
Some College, Trade or Business School	874	34.7%
4 Year College Graduate	456	18.1%
Grad. or Professional Degree	276	11.0%
Annual Household Income		
< $15,000	303	12.0%
$15,000-29,999	588	23.3%
$30,000-49,999	794	31.4%
$50,00 or more	636	25.2%
Don't Know/No Answer	205	8.0%
Ethnicity		
White	2013	80.0%
Hispanic	198	7.9%
Black	131	5.2%
Asian-Pacific	98	3.9%
Other	75	3.0%
Years of Residence in California		
1 - 2	100	4.0%
3 - 5	105	4.2%
6 - 10	176	7.0%
11 or more	2142	84.9%

Table 2. Participation in nonconsumptive fish and wildlife-related recreation by mixed and nonconsumptive users.

	Group Participation	
Activity	***Mixed***	***Nonconsumptive***
Birdwatching	24.9%	35.2%
Wildlife Photography	42.6%	44.3%
Feeding Wildlife	55.9%	68.0%
Visiting Wildlife Areas	50.5%	50.8%

Table 3. Importance of Interpretive Facilities and Services at Wildlife Refuges and Management Areas to Wildlife Recreationists. N=1930

Facility or Service	***% Rating "Very Important"***
Maps and Checklists	58.5%
Self-Guiding Trails	50.5%
Educational Presentations	48.2%
Paths, Trails, and Platforms	47.5%
Information Centers and Displays	39.4%
Demonstrations of Wildlife Management Tech.	37.2%
Informational Books and Materials	31.4%
Guided Tours	26.8%
Equipment Rental	20.4%

***Table 4.** Importance of Interpretive Facilities and Services at Wildlife Refuges and Management Areas to Birdwatchers Versus Other Wildlife Users. Birdwatchers: N=506

Facility or Service	***% Rating "Very Important"***		
	Birdwatchers	*Other Users*	*Significance*
Maps and Checklists	57.0%	59.0%	.6584
Self-Guiding Trails	53.0%	49.6%	.4429
Educational Presentations	53.9%	46.1%	.0035
Paths, Trails, and Platforms	52.1%	45.9%	.0573
Information Centers and Displays	45.6%	37.1%	.0029
Demonstrations of Wildlife Management Tech.	45.4%	34.3%	.0000
Informational Books and Materials	36.0%	29.7%	.0216
Guided Tours	30.4%	25.5%	.1008
Equipment Rental	19.6%	20.7%	.7617

***Table 5.** Importance of Interpretive Facilities and Services at Wildlife Refuges and Management Areas to Wildlife Photographers Versus Other Wildlife Users. Wildlife Photographers: N=484

Facility or Service	***% Rating "Very Important"***		
	Photographers	*Other Users*	*Significance*
Maps and Checklists	57.0%	57.1%	.4362
Self-Guiding Trails	57.9%	53.5%	.3972
Educational Presentations	52.1%	44.1%	.0996
Paths, Trails, and Platforms	53.9%	46.3%	.1110
Information Centers and Displays	40.6%	36.2%	.2984
Demonstrations of Wildlife Management Tech.	45.4%	33.5%	.0158
Informational Books and Materials	40.5%	24.2%	.0000
Guided Tours	22.6%	26.2%	.5487
Equipment Rental	17.8%	17.6%	.8248

***Table 6.** Importance of Interpretive Facilities and Services at Wildlife Refuges and Management Areas to Persons Who Feed or Attract Wildlife at Home Versus Other Wildlife Users. Wildlife Attractors: N=1041

Facility or Service	***% Rating "Very Important"***		
	Attractors	*Other Users*	*Significance*
Maps and Checklists	60.9%	55.7%	.0586
Self-Guiding Trails	52.0%	48.7%	.2204
Educational Presentations	49.6%	46.5%	.0814
Paths, Trails, and Platforms	48.7%	46.1%	.1029
Information Centers and Displays	41.6%	36.8%	.0728
Demonstrations of Wildlife Management Tech.	41.0%	32.8%	.0000
Informational Books and Materials	33.8%	28.6%	.0094
Guided Tours	29.4%	23.8%	.0212
Equipment Rental	21.4%	19.1%	.2143

***Table 7.** Importance of Interpretive Facilities and Services at Wildlife Refuges and Management Areas to Persons Who Visit Wildlife Areas Versus Other Wildlife Users. Visitors to Wildlife Areas: N=849

Facility or Service	***% Rating "Very Important"***		
	Visitors	*Other Users*	*Significance*
Maps and Checklists	62.0%	55.8%	.0216
Self-Guided Trails	54.1%	47.6%	.0151
Educational Presentations	52.9%	44.5%	.0003
Paths, Trails, and Platforms	48.8%	46.5%	.5737
Information Centers and Displays	42.6%	36.8%	.0180
Demonstrations of Wildlife Management Tech.	42.2%	33.2%	.0000
Informational Books and Materials	35.8%	27.9%	.0003
Guided Tours	27.0%	26.7%	.2231
Equipment Rental	19.9%	20.7%	.8933

***Table 8.** Importance of Interpretive Facilities and Services at Wildlife Refuges and Management Areas to Hunters Versus Other Wildlife Users. Hunters: N=210

Facility or Service	***% Rating "Very Important"***		
	Hunters	*Other Users*	*Significance*
Maps and Checklists	56.7%	59.9%	.0013
Self-Guiding Trails	36.2%	52.2%	.0000
Educational Presentations	43.8%	48.7%	.3990
Paths, Trails, and Platforms	31.4%	49.5%	.0000
Information Centers and Displays	26.2%	41.0%	.0000
Demonstrations of Wildlife Management Tech.	45.7%	36.2%	.0041
Informational Books and Materials	36.7%	30.7%	.1945
Guided Tours	18.1%	27.9%	.0000
Equipment Rental	13.8%	21.2%	.0022

***Table 9.** Importance of Interpretive Facilities and Services at Wildlife Refuges and Management Areas to Anglers Versus Other Wildlife Users. Anglers: N=857

Facility or Service	***% Rating "Very Important"***		
	Anglers	*Other Users*	*Significance*
Maps and Checklists	56.7%	59.9%	.1732
Self-Guiding Trails	36.2%	53.1%	.0183
Educational Presentations	47.4%	48.7%	.8201
Paths, Trails, and Platforms	38.8%	54.5%	.0000
Information Centers and Displays	35.8%	42.2%	.0044
Demonstrations of Wildlife Management Tech.	40.3%	34.7%	.0350
Informational Books and Materials	31.5%		
Guided Tours	20.8%	31.6%	.0000
Equipment Rental	19.7%	20.9%	.3545

*Note: This table is a compilation of separate crosstabulations. Each facility or service was individually crosstabulated against birdwatchers and other wildlife users.

Figure 1. Segmentation criteria for the seven consumer groups.

Group 1--Nonusers--persons who spend none of their leisure time outdoors and who don't participate in any fish or wildlife-related activities (N=273 or 10.8 percent of the sample).

Group 2--Capital-intensive facility users--persons who spend none of their leisure time outdoors but who make visits to zoos, aquariums, natural history museums, nature centers, or wildlife parks (N=184 or 7.3 percent of the sample).

Group 3--Organized sports-oriented outdoor recreationists--persons who spend some or most of their leisure time outdoors but don't participate in fish and wildlife-related activities (N=134 or 5.3 percent of the sample).

Group 4--Capital-intensive outdoor recreationists--persons who spend some or most of their leisure time outdoors but only visit zoos, aquariums, natural history museums, nature centers, or wildlife parks (N=186 or 7.4 percent of the sample).

Group 5--Nonconsumptive fish and wildlife recreationists--persons who spend some or most of their leisure time outdoors and who participate in at least one nonconsumptive fish or wildlife-related activity, but don't fish or hunt (N=857 or 33.9 percent of the sample).

Group 6--Mixed fish and wildlife recreationists--persons who spend some or most of their leisure time outdoors and who participate in at least one nonconsumptive fish or wildlife-related activity and who fish and/or hunt (N=820 or 32.5 percent of the sample).

Group 7--Purely consumptive fish and wildlife recreationists--persons who spend some or most of their leisure time outdoors and who don't participate in any nonconsumptive fish and wildlife activities, but fish and/or hunt (N=72 or 2.9 percent of the sample).

Divided Loyalties:
Administration, Interpretation, and the General Public

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Abstract

A shared goal among park professionals is that of developing an informed constituency that's sensitive to the dynamic needs of your resource. With this, an understanding of the role played by your organization in the stewardship of this resource can be integrated into a user experience. While we may share this common goal, it's not often articulated in a manner that is relevant to all who actively participate in its realization. By using a team effort to create a Mission Statement based on your visitor profile, you can better reach the goal of your organization.

Introduction...Mission Statement

The statement which defines the purpose for the existence of your organization and its responsibility to the resource is more formally referred to as its Mission Statement. While most organizations have one, few are implemented and even fewer provide a realistic representation of the focus of an organization's activities. If the Mission Statement is to serve as a guiding statement, it must have the potential to be actively addressed and embraced by each person responsible for its fulfillment.

Setting the Stage

To begin setting the stage for the development of the Mission Statement, all levels of personnel must be represented. Each will contribute their own focus, priorities, concerns, and perceived reality of their function and the purpose it serves in, "my contribution to the bigger picture."

Input must be synthesized into a coherent whole which becomes an integral part of Mission Statement development. This statement must have the potential to be broken down into goals and objectives that can be directly incorporated into specific job responsibilities at all levels of site operation. One critical aspect of the Mission Statement is its ability to address the needs of site visitors. They too must see their ideals incorporated into the priorities of the organization.

The Visitors

For visitor ideals to be incorporated into the management plan, it's first necessary to determine who your visitors are. Methodology developed must provide an opportunity to gather information on the characteristics of the current user population, patterns of typical site use, and long-term visitor expectations for the property. This information will enable site managers to assess how their goals compare with their perception of current users. Management is then presented with the tools for redefining their ideals to develop a truly effective Mission Statement and management plan for the resource.

Park management very often envisions the "perfect" visitor when developing their Mission Statement. These "perfect" visitors are those whose recreational expectations most closely match management ideals. The profile developed for the "perfect" visitor is often too idealistic. Management must adjust their expectations and develop programming and operations in a manner that will attract the "perfect-potential" user. Visitors currently using your facility may fit into this adjusted vision of the perfect user. However, what of those users whose recreational expectations don't coincide with management objectives? The gap between management's vision of the "perfect" visitor must be resolved with those of the current user population. With this, attempts to attract the "perfect-potential" user can then be made.

Bridging the Gap

How does park management attract the "perfect-potential" user and as much as possible modify current user behavior and expectations? Once user profiles are developed, all levels of personnel must begin to market their product to the current population. The product is the desirability for the public to experience the benefits derived from moving towards achieving the organizational mission. Through the use of information on existing recreational patterns, park personnel can begin to develop programming that can meet the needs of the public and organization at the same time.

Assessing the recreational patterns of "perfect-potential" users requires staff to identify existing recreational opportunities in a defined area and examine their visitation patterns. Through this and other appropriate methods, valuable information can be collected that will allow for more effective marketing efforts.

Achieving the Goal

To achieve the goals put forth in the Mission Statement and ultimately build a constituency that is sensitive to the needs of your resource and supportive of the role played by your organization in its stewardship:

- Interpreters must develop and implement programming that will influence visitor attitudes and modify visitor behavior.

- Resource Managers must provide services which address the needs of the resource and increase the visitors understanding and appreciation of the resource.

- Administrators, who bear the ultimate responsibility of total park operations, must provide the leadership which allows for the vision and ideals of the Mission Statement to be realized.

NatureScope Works! A Summer Science Program for You!

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Abstract

The *NatureScope* materials published by the National Wildlife Federation provide background materials, age-graded activities, references and inspiration. In 1987 and 1988, Tilden Nature Area of the East Bay Regional Park District sponsored a summer series of day-long "Science Days" featuring these materials as the cornerstone of an activity-oriented approach to natural history studies. Topics included mammals, endangered species, birds, pond and stream studies, insects, weather, and reptiles and amphibians. This paper introduces the goals of *NatureScope* and its format and outlines the program of "Science Days" at Tilden Nature Area.

Introduction

For many years, the East Bay Regional Park District naturalist staff provided a week-long, biology-oriented summer camp at our wilderness facility, Camp Ohlone, near Sunol, California. Since 1984, Tilden Nature Area staff have held science camp sessions at our Environmental Education Center in Tilden Park, Berkeley. In 1987 and again in 1988, a series of all-day, once-a-week science-oriented programs called "Science Days" were held throughout the summer. *Ranger Rick's NatureScope,* materials prepared by the National Wildlife Federation, have been the cornerstone of "Science Days" presentations the past two years. Combined with other outdoor education materials, these have provided a fun format for exploring natural history and conservation topics.

Goals of *NatureScope*

NatureScope's stated goal is...

> to be a creative education series dedicated to inspiring in children an understanding and appreciation of the natural world while developing the skills they will need to make responsible decisions about the environment.

Each issue fulfills several intentions of the *NatureScope* editor and boards (J. Braus, personal communication):

The materials appeal to a variety of learning styles. If you are familiar with the 4Mat (R) system, you will find activities that lead from Type I learning (involving *feelings,* imagery, small group discussions, and the observation of reality) through Type II learning ("just the *facts*, please"), to Type III learning (*findings*, making equipment, taking readings) to Type IV learning (looking to the *future,* making predictions, making something to take home and share with others). Cooperative learning is encouraged through playlets, teamwork, and group presentations.

Activities teach a conservation ethic, including recycling of materials for crafts (a variety of bird feeders constructed from household objects, a snake made from toilet paper rolls). Kids are encouraged to take an active role in improving their world (sponsoring a beach clean-up, writing letters in support of endangered species legislation).

The activities were nearly all pretested in classroom and outdoor settings and then revised to reflect the needs of teachers and naturalists and the abilities of participants. Photos in the books feature kids doing the activities.

A Walk Through *NatureScope*

A typical *NatureScope* issue includes a colorful cover, a statement of goal and theme of the issue, a table of contents which divides the book into several sections by theme, plus a "Crafty Corner" and an appendix (glossary, references, more information, and a list of *Ranger Rick* articles from the last decade or so on the theme of that issue of *NatureScope).* Save your old *Ranger Ricks,* this is a terrific supplement, especially for primary (K-2) activities and materials.

Other features include the following: activities that are graded by age groups (primary, intermediate, and advanced); outdoor activities; and an especially important feature of each issue is the "Copycat Pages" for duplicating and using in the classroom and on the trail.

Science Days at Tilden Nature Area

To set up our Science Days program, we publish an announcement in the East Bay *LOG,* our monthly newsletter of East Bay Regional Park District naturalist programs. It goes to over 20,000 East Bay and other San Francisco Bay area families, plus local magazines, newspapers, and news services. We take preregistrations up to two days before (to allow for purchasing supplies and copying materials in the right numbers). Class size is limited to 20 kids for best personalized attention to participants (one naturalist and one interpretive student aide usually do the program).

Average age of the participants is ten, though we had an exceptional eight year old in 1987 and sometimes kids as old as 14. Features of the program include:

l) Decorating the room with posters, books, pictures, articles and artifacts on the day's theme.

2) We begin with a "get acquainted" activity--kids cooperate better when they've made a friend or friends early in the day.

3) Activities move from indoors to outdoors and back again throughout the day (hikes to look for tracks, catch insects, view birds, take weather readings, etc.).

4) We emphasize activities that vary from big muscle ("Vertebrate Grab Game," "Bat and Moth") to small muscle activities (drawing, pasting, cutting, coloring).

5) Each day includes something to take home (a mask, beetle model, life-size paper condor).

6) We try to have some activity with a map and geography lesson as often as possible, as part of the war on geographical illiteracy that we all should be involved in.

How to Get Going

NatureScope back issues are available from the National Wildlife Federation (1412 16th Street, NW, Washington, D.C., 20036-2266). Supplementary materials (an insect "Discovery Pac" and calendar-format "Action Almanac" of hands-on activities) are also available.

I encourage everyone to join the 34,000 *NatureScope* users and discover how easy it is to build an activity-oriented science program for summer days or school days, all year-round.

Bibliography

Braus, J., ed., NatureScope, *National Wildlife Federation*: Washington, D.C.

Samples, B., Hammond, B., and McCarthy, B., *4MAT and Science: Toward Wholeness in Science Education*, ESCEL, Inc. Barrington, IL.

Science that Connects Kids to Their World

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Abstract

The new 350-page illustrated *California State Environmental Education Guide* provides teachers and interpreters with a bridge from the classroom to outdoors. Its Instructional techniques will build a fundamental understanding of the environment while integrating school lessons with those in a park setting.

A K-6 curriculum around the new guide was developed. It consists of eight instructional units and six action projects. Each unit is organized around a theme and is based on concepts from the California State Department of Education Frameworks. All units integrate content areas and are activity based. The action projects are designed to take students from awareness to action and can be done in conjunction with or separate from the units.

Introduction--*The California State Environmental Education Guide*

The purpose of *The California State Environmental Education Guide* is to provide teachers and other educators with classroom lessons and instructional techniques that build a fundamental understanding of the environment. The guide is aimed at grades kindergarten through sixth and consists of eight instructional units and six action projects. Each unit is organized around a theme and the lessons within each unit build upon each other sequentially to provide an increasingly sophisticated understanding of the theme. Lessons are based upon concepts that are taken directly from the California State Department of Education frameworks. All units integrate content areas, consider developmental levels of learning and learning styles, and balance content and learning processes.

The California State Environmental Education Guide is designed to encourage educators to view the teaching and learning process as an art as well as a science. The guide is meant to be flexible; educators can apply their professional knowledge and intuition as they and students explore the complex interrelationships of what we call "the environment."

The unit themes and grade levels are:

- Diversity of Life (K-1)
- Homes and Habitats (1-2)

- The Earth Supports Life (2-3)
- Caring for the Environment (K-3)
- Communities and Cultures (3-4)
- Adaptation and Variation (4-5)
- Energy (5-6)
- Fostering a Healthy Environment (3-6)

Rationale

Interpreters concerned with the wise use of natural resources will be encouraged by a 1988 amendment to the California Education Code Article 2, Section 51210: in the Course of Study, grades 1 to 6, teachers are directed to teach man's relations to his human and natural environment; eastern and western cultures and civilizations; contemporary issues; and the wise use of natural resources. What are the implications of this amendment?

1) Interpreters are further validated in their profession.
2) Teachers will have greater need for interpreters.
3) Interpreters have an increasing responsibility to compliment and integrate their field trips for K-6 students with what the teacher is teaching in the classroom.

As interpreters we have a "real life" advantage. We are in the environment, out of doors, using nature as our instructor. When students come to us, they are still "in school" but now the floor is the earth, the walls are of living trees and shrubs, and the ceiling is the sky. Our vision is not impaired by panes of glass, our sense of smell is not filtered with chalk dust, our sense of touch is not limited by handmade artifacts of nature. Students will not just have a vicarious experience of nature. On the contrary, they will benefit from experiential learning as they are with nature herself.

Education, at its best, teaches life lessons--lessons learned that have application to real life experiences. As interpreters, we must capitalize on making education meaningful. The best way to do this is to avoid isolated teaching experiences and provide holistic ones.

The California State Environmental Education Guide will give interpreters the opportunity to "team teach" with their classroom counterparts. Units of instruction from the *Guide* can be selected in concert with classroom teachers. The classroom teacher conducts both pre- and post-visit instruction while the interpreter supports and enriches the classroom learning by integrating the vicarious classroom learning with lessons in a natural environment.

At last, we have a guide that will release us from the grip of the one and one-half hour isolated field trip. Now our nature lessons can be fully integrated into the learning already taking place in the classroom. The *Guide* doesn't just make a new subject that teachers "have to teach," but is a vehicle that can help interpreters and teachers, working together, to incorporate environmental education into what is already being taught in the classroom.

Examples of the Link--Homes and Habitats

Everything needs a home. This instructional unit designed for the first and second grades consists of 11 activities. Students can begin by comparing animal, plant and human homes while learning that each "habitat" meets the survival needs of its occupants. Parents continue the learning at home by helping their child survey their home to discover other living things with whom they share their home.

The focus then shifts from human habitats to animal and plant habitats. These lessons are conducted outdoors and therefore fit well into the "naturalist" experience: students observe animals that inhabit a tree, study living things found in various microhabitats, investigate some of the nonliving factors that make one habitat different from another, and observe how animal coloration aids survival in a particular habitat.

Once back in the classroom/school yard students are introduced to the idea that humans modify their environment. Students investigate the impact of a wall, fence, or other human modification on the environment; compare houses from another culture to a house from their culture; and explore different population densities in the classroom. In the final activity, students are given the opportunity to make desirable changes in their own habitat by modifying the classroom environment.

Conclusion

A cohesive, interdisciplinary, team-taught field experience with classroom follow-up is an effective approach to fostering a respect and appreciation for nature. These holistic educational experiences are the jewels the children will carry away from school as they come to better understand their world. The teacher and interpreter are in a position to dispense these jewels; in this context, the environmental experiences are diamonds for children of all ages.

Bibliography

Sly, C., L. Comnes, and C. Cuomo. 1988. *The California State Environmental Education Guide.* California: Alameda County Office of Education.

Dr. Dave's Bugs Come Home

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Abstract

Insects are fascinating six-legged creatures that individuals can all come to know and love through interactive activities.

Introduction

What comes to mind when you think about insects? That they are beautiful and beneficial? That they are ugly and frightening? That they are important links in ecological food chains? And how do you convey this to your audience? Just how do you interpret insects? I've found people of all ages are both fascinated and curious about our six-legged friends.

My interest in insects was stimulated by early readings and by my college professor, Dr. Huffman, at San Diego State University. After coming to Texas via Idaho, I continued my professional interest in entomology and began developing an interpretive insect program for children. I visited local schools and was then invited to school districts in Texas, Philadelphia, Virginia, New Hampshire, Massachusetts, and Delaware, and professional meetings in Florida, Colorado, Texas, and St. Louis (Association of Interpretive Naturalists).

During my travels with Dr. Dave's Bugs, I've found children (and grown-ups) have a universal fascination with bugs. I find it important to incorporate activities and interpretive material into presentations. Now "Hop Hopper," "Flutter Butterfly," and "Crawl Caterpillar" all help in interpretive programs illustrating insect locomotion. As an interpreter, you can use the idea of movement to illustrate locomotion or to "bring your audience alive." I find it works just as well in college classrooms, in outdoor settings, and with groups of all ages. I've enjoyed groups as diverse as Cub Scouts, Girl Scouts, Boy Scouts, Kiwanis, primary school children, teacher workshops, interpreter's meetings, and professional entomology conferences. The message is this: Keep it simple and make it fun.

Got My Grasshopper Body Parts

Grasshoppers make ideal interpretive subjects--either live, preserved, or as Hop Hopper. To start with, ask your audience how grasshoppers get around ("They hop, they hop"). So, you all hop like a grasshopper hops (hop; hop, hop; hop, hop). Next, how do grasshoppers see? ("Compound eyes," you say, placing your thumb and forefinger in a circle over your eyes.) And how do they feel things? ("With their antennae," you say, holding your arms above your head and wiggling your fingers.) What are the body regions of an insect? (Point to your head: HEAD! Point to your middle: THORAX! Point to your lower middle: ABDOMEN! Repeat: HEAD, THORAX, ABDOMEN.) How do grasshoppers get around? They hop! (Point to your legs and hop.) So there you go: "I've got compound eyes (fingers over eyes) (I can't hear you!) I've got me a head! I've got me a thorax. I've got me an abdomen. (Point!) I've got great big legs (shake your legs) and I can hop! What am I? (I'm a grasshopper!) What am I? (I'm a grasshopper!) So...let's all hop like the grasshoppers hop!"

Then there is the Grasshopper Relay. Each team gets a pair of scissors, a tube of glue, and a mixed-up grasshopper picture found in *NatureScope*. They assemble the parts (complete with legs, wings, antennae, and compound eyes) and hop together to retrieve a green leaf. ("The Grasshopper Relay in Arlington was memorable. I'm so glad they assembled my parts and found a green leaf for me," hummed Hop Hopper.)

It's Off to the Races: Mealworm Activities

Mealworms are great. Mealworm cultures, easy to handle and maintain, provide a ready-made teaching/interpretive tool. Mealworms thrive on oatmeal, bran flakes, a little cornmeal, a few potato slices, and an apple once in a while. You can show the life stages (larvae, pupae, adults) and tell that one form turns into the other. For insects to change, they must shed their external skeleton (exoskeleton). This process is called "molting" and the phenomenon of change is "metamorphosis." It's best for each child to see and touch the mealworms. To do this, simply sieve out the mealworms from their culture and give each child a few. These can be placed on their desks, in small plastic dishes or on paper plates. The children will ask questions, questions, questions!

Then there are mealworm races. Get an 18-inch diameter cardboard disc, a small plastic cup with about a 2-1/4-inch opening (Solo Cup 3-1/8 oz., P35A is the "official" starting cup) and it's off to the races! Here's how you do it: place the mealworms under the cup in the center of the cardboard; when everyone is ready, lift the cup. Once you lift the cup, no touching, blowing, or handling the mealworms; no tapping or moving the disc. The mealworm must completely leave the disc for an official time to be recorded. The race can be repeated and awards given for the best performances. This activity works for all age groups and the equipment is easy to set up and carry with you. I have done this activity with 250 Cub Scouts and each den did its best to cheer on its mealworms.

Conclusion

In ending your program, always leave something with your audience, spark their curiosity, increase their awareness of the environment, and share your enthusiasm with them. With this approach, you can learn from your audience as they learn from you.

Junior Curators: A Multifaceted Program for Teenage Naturalists

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Abstract

The Junior Curator program at the North Carolina Museum of Natural Sciences encourages teenagers to expand their knowledge of nature through caring for live animal exhibits, attending a weekly speaker series, participating in structured field experiences, and presenting hands-on animal programs in the community. The program emphasizes staff-guided experiential learning. It's structured with a clearly defined set of membership requirements, learning objectives, and behavioral expectations and consequences designed to help the teenagers set their own limits. Goals for the members include learning how a museum functions, developing a strong conservation ethic, understanding basic ecological concepts, learning how to properly collect and maintain live animals and plants, keeping an organized and detailed field notebook, and learning how to give effective public programs.

Introduction

The Junior Curator program at the North Carolina State Museum of Natural Sciences was created in 1977 to encourage interest in natural history in junior high and high school students ages 12 - 17. The Museum is a 109-year-old institution with an annual visitation of approximately 300,000 and an operating budget of about $1,018,000. It's composed of Education, Research, Exhibits, and Administrative sections with 30 permanent full-time staff, 10 of whom are Education curators or technicians. The Education Section is divided into the School Programs branch and the Public Programs branch, the latter of which is responsible for the Junior Curator program. The Public Programs branch offers a diversity of workshops, classes, lectures, and field trips to the general public. The Junior Curator Program is unique in that it's an ongoing program that a student can attend for up to six years. The group averages about 25 students and is limited to a maximum of 30.

Volunteering

The Junior Curator program is composed of a number of different types of learning experiences. Each child is required to spend six hours per month as an animal care volunteer maintaining the Education Section's Life Wall exhibit and other live animals. The Life Wall houses 10 aquaria of different sizes which contain animals such as a corn snake, a painted turtle, a rusty-kneed tarantula and a common mudpuppy. Junior Curators work one afternoon between Monday and Thursday and are responsible for recording their own work hours. In 1987, the total number of volunteer hours worked by Junior Curators was 1,758.

The museum's collection of live animals fluctuates with the seasons, averaging about 75 cages and/or aquaria at any one given time. The animals not on display on the Life Wall are housed in the room directly behind the Life Wall and in staff offices around the building. A new animal care room is currently being built which will concentrate more of the animals in one place and make animal care easier.

Two-thirds of our live animals are amphibians and reptiles, in general the easiest to keep in captivity. These include true frogs, tree frogs, salamanders, aquatic and land turtles, snakes, and lizards. The other third of our collection is comprised of birds, mammals, invertebrates, and fish. We maintain two salt-water aquaria and one touch tank which exhibits sea urchins, starfish, crabs, anemones, mollusks, bivalves, and fish. At present a screech owl is the Junior Curators' only avian charge. Mammals include a striped skunk, southern flying squirrels, and a domestic rabbit, among others. Although most animals are native to our area we do keep a few exotic creatures such as Madagascar hissing cockroaches, a six-foot boa constrictor, and a long-tailed chinchilla.

Junior Curators spend one to one and a half hours each week feeding, cleaning cages and aquaria, and handling animals used in programs. The first three months as a Junior Curator are spent in training, learning how to properly care for the animals. After this period each student must pass an oral animal care test to be able to continue working as a volunteer. They must understand the workings of mechanical and under-gravel filtration systems as well as know how to perform the necessary water chemistry tests on fresh- and salt-water aquaria. They need to know the type and quantity of food required by each animal as well as the correct storage place for all food items.

Students complete animal care cards for each animal with feeding dates, food type and quantity given, and other care performed. We stress each student's personal responsibility for the animals' well-being and the consequences of poorly or incorrectly done work.

Occasionally Junior Curators will assist with special projects during their volunteer time period. These projects vary from helping to soak and spread flat a 15-foot python shed skin to helping Education staff propagate wildflowers for the Museum's Butterfly Garden.

Friday Program Series

In addition to their volunteer days, all Junior Curators attend meetings on three to four Friday afternoons per month. The Curators are required to attend 75 percent of these meetings each year. The meetings bring the group together for announcements, planning, and discussion. In addition, a speaker is scheduled for each Friday meeting to present a program on some aspect of natural history. Hands-on programs and programs involving audience participation are strongly encouraged and seem to be the most successful, especially when supplemented by slides or other visual aids.

Speakers are drawn from the Museum's own curatorial staff; the nearby universities which include UNC-Chapel Hill, Duke, and N.C. State University; and other sources within the community. Past topics have included: *Migrating Monarchs and Butterfly Tagging, Bones are Beautiful, Rhino Research at the North Carolina Zoo*, and *Breeding Snakes in Captivity.* We encourage speakers to begin their program with a brief description of their career, educational background, and how they became interested in their particular specialty area. This gives students an understanding of the many directions their interest in natural history can lead them.

Field Trips

Some of the most meaningful learning in the program takes place outside the museum on our monthly field trips. The field trips vary from three-hour local trips to eight- to ten-day international trips. The field trips aren't mandatory but they are a very important and popular part of the program.

The primary goal of field trips is to expose the students to the ecology of the distinctly different habitat types found across the state of North Carolina. The mountains, piedmont, and coastal plain regions of our state offer a rich diversity of plant and animal life to be discovered and studied. It's our hope that through these field adventures the students will achieve an understanding of general ecological concepts as well as a more in-depth knowledge of specific topics of interest to the individual. Another goal of our field trips is that we have fun!

The students are required to keep field notebooks which chronicle the discoveries of each trip. We review our field notes as a group either during or immediately after a field trip to encourage sharing information and to reinforce the importance of field notes.

On field trips, Junior Curators learn how to observe and ask questions, how to use field guides, how to properly collect live animals and plants, how to work together in teams, and how to record field notes and collect data. We hope that these experiences will help foster a conservation ethic that will remain with them throughout their lives.

Each February we take a field trip to the Sandhills region of North Carolina to observe winter-breeding amphibians such as tiger salamanders, eastern spadefoot toads, and ornate chorus frogs. Although we visit the same ponds year after year, the experience is never the same due to climatic variations and population fluctuations. The Junior Curators see firsthand the close relationship between the amphibians and their environment while experiencing the thrill of wading through a pond at night wearing chest waders and a head lamp and looking for calling frogs. Some of our other recent field trips within North Carolina have included Bald Head Island to look for hatching loggerhead sea turtles, South Mountains State Park to study mountain ecology while hiking and camping, the Duke Primate Research Center, and Discovery Place science/ technology museum in Charlotte. The group has also adopted a local stream through the North Carolina Department of Natural Resources' Streamwatch program. We periodically visit our stream to monitor water quality, investigate stream invertebrates, and clean up trash.

Each summer we plan a long-distance field trip which alternates between international and U.S. sites. Summer destinations in past years have included Cape Cod, which featured a whale-watching trip; Highlands Biological Research Station in the North Carolina Mountains; caves in southern West Virginia; the Peruvian Amazon; Trinidad; and Tobago. Occasionally a longer field trip will also be planned over the public schools' spring break, as was our trip to the Okefenokee Swamp this past April. Fund-raising efforts by the group help support the long-distance trips, but the majority of the cost is borne by the individual Junior Curator.

The regular structured Junior Curator program with volunteering and Friday meetings runs during the school year from September to early June. In the summer Junior Curators are encouraged to assist with the Museum's summer classes for children and to help with animal care when they are available. Our long summer field trips usually are scheduled in August after the Museum's summer programs are over and before school starts.

Field Notebooks and Individual Programs

Other requirements of members include periodic field notebook reviews and presenting at least one program each year on a natural history topic of their choice to a group with an adult supervisor. The field notebook reviews take place twice a year and focus on a field trip of the student's choice. The Junior Curator is expected to describe the location of the field trip and the habitat types which characterize the area. He/she must also be able to give examples of some typical plants and animals he/she saw on the field trip and discuss possible ways in which the plants and/or animals are adapted to their particular habitat.

The program requirement is fulfilled by giving a hands-on program to a group such as a science class, a Girl Scout troop, a church school class, or any other group with an adult supervisor. The Junior Curator schedules the date of the presentation, turns in a rough outline three weeks prior to the program, and then completes a final outline and a list of animals to be used in the program one week ahead of time. The programs tend to be 20 to 45 minutes long, depending on the experience of the Junior Curator and the needs of the group.

We usually advise the new Junior Curators who are inexperienced in program delivery to give their first program to a small group of children younger than themselves, for example, the class of a younger brother or sister. Some of the older Junior Curators plan and present week-long programs at Boy and Girl Scout summer day camps. Before their program, the Junior Curators give an evaluation form to the adult advisor who observes and evaluates the performance. The form guides the adult in critiquing the speaker on points such as enthusiasm, eye contact with audience, ability to ask and answer questions, and control of the live animals. It's returned to the Museum staff coordinator for the Junior Curator program who shares and discusses it with the individual Junior Curator.

Recruitment and Selection

Recruitment for the program is primarily by word of mouth. A sign outside the Life Wall credits the Junior Curators with the upkeep of the exhibit and briefly summarizes the program. This year information on the program was also distributed to local science teachers along with recommendation forms for their use. Interested students fill out a two-page application form which asks such questions as: "Have you ever made a collection of anything?," "Have you kept and cared for pets at home?," and "Describe the specific areas of natural history which you are interested in and how you are currently pursuing these interests."

We require that all Junior Curator applicants have an overall B average in school. The grade requirement is meant to screen out students for whom a three-hour weekly commitment to the Museum could seriously compete with time better spent on homework. We stress to all of the Junior Curators the importance of schoolwork to their future careers and that the program should complement, not compete with their studies. There is no cost involved in joining the Junior Curator program; however, parents are strongly encouraged to join the Museum's support group, the North Carolina Museum of Natural Sciences Society. Field trip costs such as gas, entrance fees, etc., are divided among the students to cover expenses.

Applicants and their parents attend an interview after the written application has been received. We feel that parents need to be aware from the start that joining Junior Curators means a major time investment for their child. In our evaluation of the applications and the interviews we look for evidence of a strong interest in the natural sciences and enthusiasm to learn new things. We want students who intend to fully participate in all aspects of the program, not just the field portion or just the animal care volunteering.

Staff Involvement

The program is administered by two Education Staff members. The chief coordinator of the program, the Assistant Curator of Public Programs, is in charge of planning, scheduling, and implementing programs and field trips; keeping records of volunteer hours and other requirements; handling all parent and Junior Curator paperwork; performing field notebook reviews; and assisting the students with their individual program preparation.

A second staff member, the Animal Care Technician, has the responsibility of overseeing the daily animal care work by Junior Curators as well as training and testing new Junior Curators on animal care procedures. This person also assists the coordinator in many other aspects of the program as needed. Both staff members accompany the students on field trips, since it is a museum policy that a minimum of two adults supervise youth field trips. These responsibilities comprise about 40 percent of the total work time of each staff member.

Conclusion

Overall the program is a great success. We are continually receiving positive feedback from parents and the students themselves. For many of the students Junior Curators is the most important group they belong to because of the common interests among the members. In Junior Curators it is acceptable to be a girl who likes to catch frogs or a boy who wants to teach children about animals. There are personality conflicts and cliques within the group, but a spirit of cooperation and acceptance is generally felt among the members. Standards for behavioral conduct are clearly outlined and the students realize that privileges such as attending field trips, Friday meetings, or volunteering can be suspended when they misbehave.

The program has tended to attract primarily white upper-middle class students. We would like to create a more socioeconomically balanced group and have increased our publicity in the public schools in hopes of attracting a broader cross-section of interested students. It's too soon to tell whether science teachers' student recommendations will help to bring about this change. It's a problem we find throughout our public programs.

A multifaceted program for teenage naturalists, such as our Junior Curator program, can be a richly rewarding experience for both students and instructors. At the heart of the program is the excitement that comes from holding a flying squirrel, watching a butterfly emerge from its chrysalis, hearing a barred owl call in the night, smelling the pungent aroma of sassafras root...and having other people to share it with.

Teaching American History in the Forest

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Abstract

Much of the history of the U. S. can be explained by how the colonists used the forest resources as they spread westward. Various species of trees were named by either the settlers or Indians for what the tree was best used. Westward expansion and the construction of cities such as Chicago and St. Louis resulted in logging the pine forest of Michigan and Wisconsin. The legendary hero of the times was Paul Bunyan.

History in the Forest is an interpretive program that uses Indian legends and early American folklore related to the forest, as well as a collection of early forest products and wooden implements to teach the importance of the forest to modern-day Americans and early Americans. It's designed to provoke concern for natural resources with examples of uses and abuses from the past.

History in the Forest was designed to take advantage of both the nostalgia and trivia movements now prominent in adult society. The program is geared for adult conservation education groups at the Piney Woods Conservation Center and could be adapted to nature centers throughout the United States.

Introduction

History in the Forest is an interpretive program that uses American folklore, Indian legends, and a collection of early forest products and wooden implements to teach the importance of the forest to modern-day Americans and early Americans. It's also designed to provoke concern for natural resources with examples of uses and abuses from the past. By covering historic and prehistoric uses we are also able to explain the common names given to many trees. This allows us to sweeten the "bitter pill" of taxonomy and teach tree identification and natural history as we present the cultural history of the trees. It begins as a short lecture in which we discuss the importance of the American forests and give participants walking staffs made of several different kinds of wood. Then we take a short walk through a mixed hardwood/pine forest. Along the walk the participants either match trees to the walking sticks or a trail guide. As we match the trees and sticks, the guide discusses the pioneer uses or other significant facts (trivia) about the trees. For some trees, the guide carries samples of the products made from those trees to share with the participants.

Background Material

Much of the history of the United States can be explained as related to the way colonists exploited the forest. Various species were named by the early settlers or Indians for the tree's best use. The forests were mined by the logging industry to make way for the homes, farms, and towns that grew with the westward expansion. Heroes and legends such as Paul Bunyan grew from the early days when clearing the forest was necessary for growth of the country.

The historical importance of the American forest actually begins in medieval times in Europe. Clearing forests for agriculture and fuel resulted in most of England and Europe being cutover by the late 1500s. The areas that were forested were protected by royalty, and the quality of trees in even these areas greatly diminished over time. At the time of the Spanish Armada (1588), England was not a great naval power. The entire royal navy consisted of only a few small ships; however, by the time of the American Revolution, England had over 700 "men-of-war" in the British Navy and "Britain ruled the waves." The wood for those ships came from the forests of America. Ship masts were so important militarily that in 1691 all trees larger than 24 inches in diameter in the colonies on lands not in private ownership were declared the property of the British Navy. Known as the Broad Arrow policy for the symbol of the Navy which was blazed on the most desirable trees, this regulation was probably one of the causes of the American Revolution. It definitely caused the Pine Tree Rebellion in New Hampshire in 1772.

As the United States grew westward forests were cut to build the cities of the treeless great plains, to rebuild Southern cities following the destruction of the Civil War, to rebuild Chicago, and to build thousands of miles of railroad tracks. By 1900, most of the great forest of the eastern half of the United States had been cleared to make way for people and progress. The logging industry jumped across the great plains to the forests of the West and worked their way toward the west coast to satisfy the nation's demand for forest products. Presently only a few thousand acres of the original old-growth forest exists.

Fortunately for us, forests grow back, and a few wise men such as Gifford Pinchot, Theodore Roosevelt, and Aldo Leopold saw the need to practice wise use of the forest.

Species Facts

The Indians and the earliest settlers were forced to depend upon the forests for most of their daily needs. They knew the individual trees and species for their qualities and for the materials for which they were best suited. A great deal of this knowledge has been lost to the general public. Most people today could not survive in the same forest in which their great-grandparents lived. The following is a summary of the material covered during a typical walk. We often identify numerous other species, but I believe extensive discussion should be limited to eight or ten species.

1) Flowering dogwood (*Cornus florida*). Flowering dogwood is a tree that most people recognize and is appreciated for its abundant white flowers in the early spring. There are many theories on the source of its name, but the most likely is based on its use as spindle dogs since it's hard, dense, and not given to splitting under the pounding that spindle blocks must absorb. It was also popular for splitting wedges. Large individuals are rare, perhaps due to slow growth rates and intensive logging pressure for them during the late 1800s and early 1900s. Maximum size is 40-50 feet tall and 12-18 inches in diameter.

2) White oak (*Quercus alba*). With the decline of American chestnut, the white oak family (a collection of about ten species) and *Quercus alba* in particular became perhaps the most important tree of the eastern deciduous forest. It had numerous uses, but perhaps the most important was as a food source. All the white oak family have white- or tan-colored acorn meats as contrasted to the redder meats of the red oak family. The acorns were ground into flour or eaten directly. They were also gathered and fed to livestock. The wood is used for tight barrels, and white oak is the stock of choice for whiskey barrels. Slow to decay and easily split along its straight grain, it was used for rail fences, roofing shingles, baskets, and furniture.

3) Red oak (*Quercus borealis, Quercus falcata,* and others). A collection of about twenty major species, the red oaks are so named for the dark orange color of the acorns. The orange color is indicative of the high content of tannins found in the acorns, which imparts a bitter flavor. The wood has many qualities similar to white oak, except that it does not make "tight" barrels. Interestingly, the plug in whiskey barrels is made of red oak to allow the whiskey to expand without rupturing the barrel. The red oaks can be separated in the field from white oaks by the presence of bristle tips on the leaves of red oaks.

4) Sweetgum (*Liquidambar styraciflua*). This tree is one of two gum trees that we talk about, the other being blackgum. When wounded, the tree exudes a clear sweet sap that can be chewed or eaten. The sap contains a mild antiseptic, styrax, which is the source for the specific epithet. It's the styrax in the sap that keeps the sap from being invaded by fungi and mildews and keeps it edible. The wood of the sweetgum tree is soft and works well, so it was and is still used in ornately engraved furniture. The tree is also one of the early successional hardwoods.

5) Blackgum (*Nyssa sylvatica*). I would teach this one if only for its wonderful scientific name; it means nymph of the forest. It's the first tree in the southern hardwood forest to change colors in the fall, turning a brilliant red. Guess what color the gum of this species turns when it exudes from a wound? It contains no antiseptic to prevent bacteria growth in the sap, so it spoils rapidly. It was a popular wood for tool handles and was the wood of choice for hoe handles. It was also used to make the wooden sledges used to drive the dogwood wedges used to split the white oak rails.

6) Hickory (*Carya spp.*). There are numerous species of hickories, but they all derive their name from the Indian word powhickora which means "flour." The Indians found the hickory to be one of the most useful trees in the forest. The meats of the nuts could be ground into flour; the husks of the nuts made a spicy seasoning and a dark tan dye. The wood is strong and resilient and often used for bows and other tools. The rotted husks were used to harvest fish. The settlers picked up on most of the Indian uses and also discovered that the wood was excellent for wagon spokes and tool handles. During the depression, numerous rural people were forced to turn back to hickories for flour and this gave rise to the word "hicks" to describe poor country people.

7) Pine (*Pinus spp.*). There are four major species of southern pines in our region, all fairly easily recognizable on the basis of needle length or cone size. However, the important thing about the pines is their significance in the economy of the state in the past and present. They were the dominant forest type due to frequent fires across most of the South. They were cut to rebuild the cities of the South and to build the cities of the southern great plains. The Southern pine forest was the last great eastern forest. And regardless of what Euell Gibbons said, not very many parts of the southern pine are truly edible.

8) Sassafras (*Sassafras albidum*). Sassafras is a good way to end a walk. It's an interesting species to talk about and a delightful drink to offer your participants. To the Indians it was known as a cure-all. The roots contain *oleum sassafras*, a volatile oil that is a pain reliever, stimulant, and diuretic. This often leads to a discussion of "spring tonics" and other edible plants. I try to point out the importance that other plants have in medicine and other aspects of modern society.

Conclusion

America's forests have always been our strength. Today they are being attacked from two fronts. They are still being exploited by some landowners for their immediate cash value. They are also being threatened in some areas by well-meaning individuals who would choose preservation over conservation. It will take a balance of wise use and protection in the future to ensure their continued growth.

One Approach to Getting the Most from Your Staff

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Abstract

This paper covers how to successfully integrate yourself as a manager into a new staff. Steps for successful integration include meeting the staff, respecting others authority, encouraging the sharing of ideas, communicating expectations clearly, and giving immediate feedback.

Introduction

You have just been hired into a position as a supervisor, manager, or administrator. You were hired because you were the most qualified, convincing candidate. Now you are responsible for all the improvements that were discussed in the interview. The staff has all either been in place for years or are six-month seasonals. How will you make it work without hiring new staff?

As a first step, take a look at yourself: how will you approach them? If you were hired from the inside, you may know exactly what you need to do. If not, how do you assess their capabilities, evaluate where changes need to occur, and decide what will be accomplished next? Were you trained as an administrator or "hired up" because you were so good at what you did before? Do you make decisions by yourself or will you build a management team? What do you expect from them and, conversely, what do they expect from you? Ultimately, the question is: What is your management style? Have you ever thought of it as a specific? Have you ever evaluated your own style or just accepted it because it worked? Secondly, the situation: do you work for a state, federal, or local municipality? Are you a nonprofit or profit organization? Are you an autonomous unit or part of a larger network? Do you have an administrator on-site that you report to or are you "it"--the last word?

Have you been instrumental in establishing the goals that you must meet, or have they been decided somewhere else by someone else for you to implement? Are your staff aware of your organization's goals, have they taken part in the process themselves?

These, then, are the components that must be evaluated before you proceed. Jumping in and making changes in policy, programs, or staff must be put on hold until there's a clear understanding of how all these pieces fit together. But, you say, there isn't a lot of time--so how should you proceed?

Getting Started

Since management really is getting things done through people, that's where the focus must be--on the people. A few techniques to begin with might include (listed in no specific order):

1) *Meet each staff person* that you supervise individually to learn who they are, what they do, what they expect, and how they see themselves fitting into the big picture.

2) *Respect the responsibility each supervisee has and be sure that each has the authority* he/she needs to get his/her job done. They go hand in hand. It may seem like a lessening of your "power"--but your staff needs to know that you trust them to do what it is they were hired to do. Your role is to be available to discuss this task regularly to keep them on track.

3) *Encourage your staff to share ideas.* This is where serious team building takes place. When holding staff meetings solicit items that they need to resolve as well as those that you need to accomplish. Encourage diversity in problem solving and don't feel you need to have all the answers.

4) *Communicate your expectations clearly.* A good administrator knows what needs to be done but doesn't do it herself. He/she clearly explains what the needs are to staff and, if necessary, how to get it done. He/she follows up on results achieved.

5) *Give feedback immediately.* When supervisees have done something great (or terrible) tell them. They need to hear it as soon as possible. If it's criticism rather than compliments do it sensitively. Be sure your comments are understood. Write them up briefly, negative or positive, for the personnel file. If it's positive--do it with sincerity and enthusiasm and spread the word to others that it has been well done.

If you know all the parameters of your position (and in the governmental agencies there may be many) and are able to communicate your expectations clearly to your staff, you will be on the right track. If you are able to listen to their ideas and create an environment where they will listen to and support each other, it will be easier still. And if you are able to generate enthusiasm, excitement, and trust with your staff to create the best quality ever presented by your organization, you will all feel that what you are doing really does matter and is valued by those who participate and those to whom you report.

Planning, goal setting, and evaluating are components in the management spectrum, as well as communications. When careful planning is done there are fewer mistakes. Whether short-term problem solving or long-range planning, when the process is thoroughly thought through with the involved participants, the product is superior.

To accomplish specific tasks, you as manager need to be certain that the goals have been set to get the job done. If the communications line is running smoothly this can be done in regularly scheduled meetings. If, however, there are lapses in information sharing, things do go awry.

Evaluation--A Reoccurring Step in the Process

After setting into action all of the components included thus far, the next step is evaluation. Evaluation of programs, staff, and yourself. The program evaluation can be done as each component is finished. Did the program satisfy the goals that were set, i.e., make money, provide an educational experience, create understanding, etc.? If it didn't work, why not? If things haven't worked out, talk it over constructively. No blaming--it doesn't help. But do include all interested parties. The results of each review will make the longer range planning more successful because it will be based on achievements.

Staff evaluations are something that are easy to let slide and essential not to. If there are job descriptions that truly reflect the work the staff does, the evaluation must be based on those attributes.

Conclusion

It looks comparatively easy when it's laid out in steps. In fact, if that was all there was to being the "boss," it would be simple. But this is just the personnel piece. Most administrators don't have the luxury of working with one piece at a time. However, if your staff knows they are competent to do their jobs, the fires that always flare up and need to be put out won't happen as frequently, leaving you the time you need to administrate the rest of your programs and look like a star.

As time goes by and you know the capabilities of your staff and have everything running smoothly, it's important to take a step back, give a good hard look at what's happened, and identify where you're taking your team and how they are feeling about the direction you are moving towards. The key activity here is to listen--throw out ideas that can be discussed--not always agreed with--and listen to the interchange that goes on around the issues.

A Museum's Nature Place:
Nature Toys and Gadgets for Indoor Nature Programs

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Abstract

The Nature Place at Cranbrook Institute of Science uses toys, gadgets, and participatory activities to enhance indoor nature programs. A natural history and science museum's strength lies in its collection materials, but further learning can take place with alternate teaching techniques. Toys, gadgets, and activities along with the discovery method of instruction encourage students to make discoveries rather than just look around. The discovery process involves the use of most of our senses at any one time. When using only one sense, things are not always what they seem to be. Science toys, gadgets, and participatory activities help focus many senses so people may better use the indoor environment.

Toys, Gadgets, and Activities to Exercise the Senses

People often ignore or misunderstand the information gathered by their senses. By using our senses fully and perceiving all we can, we learn how to integrate the knowledge from our senses in the discovery process and improve our observation skills.

Sight

Many animals use sight for survival. Location of an animal's eyes reveals clues about that animal. A lateral viewer and a tossing game are two strategies used to teach concepts about sight.

We depend very heavily upon our sense of sight, yet often we only give something a cursory glance and the experience is over. To improve visual interpretation, some of the following methods are used during indoor animal-life programs:

Gadget: Lateral Viewer. A homemade periscope-like gadget which permits us to experience what it's like to see as if we had eyes on the side of our head. This aids teaching the concept that most animals with eyes on the side of their head are animals that are best suited to hide from predators.

Activity: A simple tossing game using two student participants demonstrates binocular vision and its importance. Students can easily toss an object back and forth when using their binocular vision (both eyes open). After closing one eye (binocular vision is taken away) it becomes more difficult to judge distance and students begin to miss catching the object. This activity demonstrates why many animals which have their eyes on the front of their face are animals that hunt.

Hearing

Listening is an important skill. A toy called a Rubber Band Hummer can be used to focus attention on listening skills while teaching about how sound is made and transmitted. Sharpening listening skills can be especially important in an outdoor environment.

Toy: Rubber Band Hummer. An easy-to-make toy demonstrates principles of how sound is produced. A 3X5 card, craft stick, and rubber band creates a toy that can be spun around to create a sound similar to that which is made by some insects. By whirling the hummer around, friction from the air sets the rubber band vibrating. Vibrations are passed through the air and can be detected by the ear as sound. Whirling the hummer faster creates a louder sound. A tighter rubber band has a higher pitch; a looser band has a lower pitch. This toy has been used with students as well as teachers during teacher training workshops.

Touch

Young people, if given a chance, will more readily use their sense of touch than adults. Touch can include feeling weight, temperature, and texture. The use of touch can lead to discovering natural relationships.

Toy: Interplanetary Coke Cans. This homemade toy demonstrates the weight of a can of Coke if it were on different planets and under different gravitational influences. By filling empty Coke cans with varying weights of gravel and lead pellets, this toy is used to demonstrate how much a familiar object would weigh in different environments. They are used during workshops to teach concepts of different gravitational pulls on different planets and density, while using the sense of touch. This toy focuses students' concentration on touch.

Activities: To use the sense of touch during an indoor animal life program, specimens are touched to teach about animal adaptations. Students pet a raccoon mount to feel its winter time adaptation for survival (thick fur). An owl and crow mount are petted and students easily feel how the owl's feathers are much softer than the crow's (adaptation for flying quietly at night).

Smell

The unique odors of various environments, materials, or mixtures can be used for identification, e.g. the earthy aroma of decomposing leaves, cooking odors, or presence of an animal such as a skunk.

Demonstration: Skunk and spray bottle. A fun demonstration used to stimulate students by having them use their sense of smell. After the students learn about how animals use their sense of smell for survival, the presenter brings out a skunk mount to discuss how animals use smell in other ways. Upon completion of the discussion on the skunk and its interesting defense mechanism, a spray bottle with a clear liquid is brought into view. The audience is told that scientists can be very clever when mixing chemicals and they are asked if they would like to smell what is inside the bottle. Since the skunk is in view, most people will think that there is a possibility that the bottle will contain skunk scent. The audience is misted with the contents of the bottle. They use their sense of smell to discover that it was peppermint that was sprayed and not skunk smell after all. In this example the sense of smell can easily be substituted for the sense of sight.

What Happens When We Don't Use All the Senses?

Demonstration: Brick in the Bag Trick. A quick participatory activity shows us what happens when we only use a few of our senses. We may find that things are not always what they appear to be. A brown paper grocery bag is shown to the students and they are to figure out what is inside of the bag. Students are permitted to hold the bag at the top and they discover that the object in the bag is heavy. The bag is knocked on a wood bench and creates a loud noise. The students observe that the object sounds hard. Students are permitted to touch the bag with a flat hand. They are then asked to guess what object is inside. Once all the students have had the opportunity to guess what is inside of the bag, the presenter slowly opens the bag and struggles to remove the object from the bag: a brick. The brick is viewed for a couple of seconds before it is quickly tossed either at the audience or at a window. But there is no damage--the brick is a fake made of foam. After the shrieking and laughing has subsided, the students are asked how they let their senses be fooled. When we don't fully use our senses, they can sometimes give us conflicting information. The discovery is eventually made that there must be something else in the bag (a real brick at the bottom of the bag). This is a fun trick to use to encourage and remind students to use all their senses to make discoveries in the nature center--rather than to just look around.

Scientific method: Using All the Senses

Toy: Rattlebacks. A participatory group activity which uses the scientific method. This activity begins by grouping participants who will be participating in a laboratory investigation. Each group is given a rattleback and is to follow the scientific method:

1) State the problem (questioning): What is the object?

2) Form the hypothesis (brainstorming): Ideas on what the object is...

3) Experiment and observe (trying ideas): Try experiments on the object. What properties does it have? Is it hard? Does it spin? What type of unusual behavior does the object display?

4) Interpret data (what was learned): Why does it behave in unusual ways?

5) Drawing conclusions (sharing results): It's a toy with unusual properties.

A rattleback is a little canoe-shaped piece of plastic which is capable of some most unusual behavior. Spin it clockwise and eventually it will reverse its direction of spin. By pressing down and releasing one end or tapping one end it will begin to spin.

The curved bottom of the rattleback is not aligned with the flat top and the bottom is at a slight angle. The rattleback is oblong, putting more mass at its ends than at its sides. These features throw the rattleback off balance and thus it displays its unusual properties. The rattleback is used with students as well as teachers as a creative way to teach or learn about the scientific method.

Conclusion

All the toys, gadgets, and participatory activities are used at Cranbrook Institute of Science as a way to involve students, keep them surprised and interested, and to increase curiosity while they better use the indoor environment. Most of the toys and gadgets are used to enhance teaching concepts while actively involving students using their senses.

A booklet with instructions for making these and other science toys can be obtained by writing to Cranbrook Nature Place at the above address.

The Devil's Work in God's Country:
Politics and Interpretation in the 1990s

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Abstract

Politics in America of the 1990s isn't necessarily the democracy of our grade-school textbooks, but a mix of lawsuits, lobbying, and special-interest-group coalitions. The implications for interpretation and interpreters are both exciting and grim, and clearly controversial. A new brand of professionalism may be required, placing new demands upon those that practice interpretation.

Introduction

Freeman Tilden (1977) called interpretation a public service, "recently come in to our cultural world." Perhaps he hoped it would be aseptic, dignified, and humane, provoking and delighting citizens to learn about nature and history. But in contemporary America, interpretation is a political act. It's increasingly intertwined with the chaotic democracy that is American politics.

Examples abound. In the 1970s, "energy interpretation" was the theme; the strategy was to use interpretation in President Carter's "moral equivalent of war" (whatever it was) and reduce petrol consumption, thereby freeing us from the grasp of global geopolitics. The Japanese internment camp at Manazanar was recently given landmark status (though not made a Historic Site); its interpretation was embroiled in debate over reparations to Japanese-Americans interned there. The Civil War battlefield at Manassas is currently threatened by a shopping mall; the messy political battle includes interpreters, historians, real-estate developers, agency officials, members of Congress, county commissioners, and private citizens determined to protect the historical scene or excited about making a profit (Washington Post, 1988).

Interpreters are increasingly asked to interpret critical resource issues and work with local communities. Both activities require political savvy, skills, and success. Like it or not, the interpretive profession is now called upon to do "the devil's work" in "God's country."

American Politics

The new politics of America bears little resemblance to the efficient and polite democracy of our grade-school textbooks, Boy Scout manuals, or nostalgic (and forgetful) remembrances of grandparents. The changes have been cumulative, but two important dates, 1945 and 1975, reflect major shifts. In his book *Beauty, Health, and Permanence: Environmental Politics in the United States, 1955-1985,* Samuel Hays (1987) argues that the end of World War II is a dividing line in American politics and environmental history. The war is the historical boundary between old and new values, marked by several trends:

1) The population became more educated, due in part to the GI Bill.

2) The general public became more concerned with quality of life as an idea or value.

3) Discretionary income rose--from necessities during the Depression to amenities during the 1960s, wants became needs. Consumption increasingly guided American economic and political decisions, rather than production.

4) A new class of experts emerged including managers, bureaucrats, scientists, lobbyists, advocates, writers, editors, consultants, lawyers, designers, planners, fundraisers, staff members, and professors.

5) The formation of "iron triangles"--composed of agency, legislative, and interest groups aligned together. The classic example is Eisenhower's "military-industrial complex," though others exist.

The second date, 1974, was a pivotal point in the redistribution of power in America. Hedrick Smith, writing in his new book *The Power Game: How Washington Works*, describes its importance:

> "To most Americans, 1974 was the memorable year in which Richard Nixon was driven from the White House by the Watergate scandal. But Watergate is now behind us and what is far less well remembered--even though it is more enduring--is that 1974 was also the year that climaxed a political earthquake. It was an earthquake that shook the established power structure of the American political system."
>
> "Forces which had been pulling at the threads of power for several years finally ripped apart the tighter weave of the old power structure. The old political context for governing changed. That transformation dramatically altered how power works in Washington. And the Impact is still with us today." (1988:20)

Several events occurred. Congress seized power through the Budget and Impoundment Control Act of 1974, which barred future presidents from refusing to spend what Congress voted. The Congressional Budget Office was established; no longer would the Administration's figures be the only ones debated. In the House of Representatives, the seniority system was overthrown; scores of subcommittees were formed, each overseeing a piece of the Federal machinery. A large class of freshman House Democrats was elected, further weakening the traditional political power structure, and increasingly independent Americans split their votes, weakening the major parties.

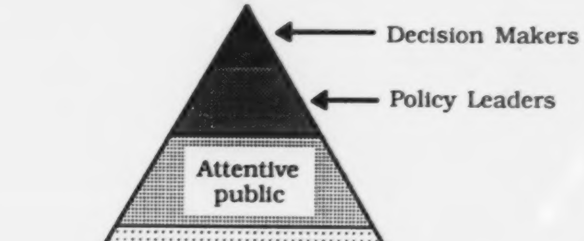
One result has been the explosive growth of special interest politics. Statistics tell the story. In 1961 there were 365 registered lobbyists in Washington; in 1987 there were 23,011. In 1961 the District of Columbia Bar Association listed 12,564 lawyers; in 1987 there were 46,000. In 1961, 1,522 journalists had Congressional press passes; in 1987 there were 5,250. In that pivotal year, 1974, Political Action Committees (PACs) for various causes and interests numbered 608; in 1987 there were 4,157. These PACs raised $8.5 million in campaign money in 1974; in 1986 they raised and contributed $132.2 million. There are now 43 lobbyists for every member of the House and Senate.

In addition, the political tools have dramatically changed. Video feeds allow politicians to stage events and beam them by satellite to home-state televisions; both political parties have expensive studios in Washington dishing out these "electronic press releases." High-technology computerized mail allows the "narrowcasting" of messages aimed at specific demographic or interest groups; in 1984, 920 million free pieces of mail were sent out by Congress. A machine ink that looks like it was signed by someone (it even smudges properly) has been developed. With large staffs, casework and contact with local constituencies has increased, involving favors from small to sleazy. And, of course, there is all that money.

The post-1945 and post-1974 political changes have genuinely altered the way policy is developed, decided, and conducted in the United States. The net effect is the "balkanization" of power, a rise in importance of Congressional staff members, and the increasing importance of *negative power*--the ability to prevent things from happening. Negative power has increasingly been adopted by the environmental movement, thus stopping nuclear power plants, below-cost timber sales, water diversions, and so forth. The public has been involved, albeit in new ways.

This doesn't mean, however, that our entire public is politically active; indeed, policy formulation is largely decided by the powerful with self-interests and influence. Figure 1 suggest that for each issue or interest, there are different publics or constituencies. Some may join for alternate reasons: progun groups include both hunters and constitutionalists; tourism associations include ORV groups and wilderness users. The contemporary political strategy involves expanding the interested and attracted publics.

Figure 1. A stratified model of policy formation



Hence, we find the link to interpretation, its importance as propaganda, agency boosterism, or call to action. McKendry, in the National Park and Conservation Association's (NPCA) planning document, *Interpretation: Key to the Park Experience,* writes:

> "Interpreters commonly believe that their goal is to change visitor behavior. Building from that, they are directed to expand from personal services to mass media to spread their interpretive reach and volunteer programs to build support for the parks. Not only are interpreters' responsibilities expanding, but many of these responsibilities can be regarded as activism." (1988:42)

The result is derivative of the national political scene. There has been a proliferation of national park "friends" (read special interest) groups; in 1987 there were 150, each a constituency capable of organizing its support and exercising its negative power. There are 65 cooperating associations serving 330 units of the National Park System, membership of the NPCA is now 60,000 strong, and other organizations like the National Association of Interpreters (NAI) represent important actors in interpretive affairs.

Interpretive Politics in the 1990s

What should interpreters be prepared for? How can they prepare? First, it's clear that the mixing of parks and politics will continue; regardless of who wins next month's election, parks as patronage can be expected. Even more telling is that the "parks as islands" metaphor no longer works; politically, they (and their interpreters), are surrounded. The NPCA's plan for interpretation states:

> "National parks operate within a political environment. Successful constituency building requires organized groups held together by shared interests. The parks must build a constituency out of many smaller, separate ones. Different organized groups--adjacent land owner, developers, industry, inholders, universities, Boy Scout groups, tour groups, general visitors--bring their own agendas to a collective park constituency. Park managers and interpreters must be sensitive to competing input from these various constituencies. Building a consensus among constituencies with competing values and demands requires political sensitivity, talents, and effort that extend beyond the mere act of "reaching out." Training in mediation, conflict resolution, and regional and local constituency building is necessary." (McKendry, 1988:56)

Secondly, public distrust of experts and the "iron triangles" will likely rise. We shouldn't underestimate the linkages between Chernobyl, Bhopal, Three-Mile Island, Love Canal, and Challenger as symbols of technological failure, and the rise of fundamentalism, garage-front churches, antievolutionism, and resistance to "environmental education." Using interpretive activities as forums for environmental politics has its dangers. As one visitor commented to me after enduring several political diatribes masquerading as interpretive walks:

> "I wanted to learn about the park. After the second lecture, I just quit going to the visitor centers or listening to the bastards."

Thirdly, parks and historic sites will increasingly be tools for economic development, with struggles appearing between states for the disposable income of baby boomers on vacation. The political and economic importance of gateway communities, tourism, and the contribution of parks to this scheme will make interpretation an important player in the marketing of tourist regions. County commissioners, governors, and state legislators will be interested in the content and delivery of interpretive programs, and their agendas may clash with the agencies involved, in addition to the interpreters caught in the crossfire.

Conclusion

Elsewhere, I and others have argued that interpreters have both the potential and responsibility to play a critical role in the functioning of park ecosystems (Machlis and Field, 1984). But to do so will require new skills and willingness to grapple with difficult issues. To be effective in the 1990s, I feel (perhaps fear) that interpreters will have to do the devil's work in God's country.

Bibliography

Hays, Samuel P. 1987. *Beauty, Health, and Permanence: Environmental Politics in the United States, 1955-1985.* Cambridge: Cambridge University Press.

Machlis, Gary E. and Donald R. Field. 1984. *On Interpretation: Sociology for Interpreters of Natural and Cultural History.* Corvallis: Oregon State University Press.

National Parks and Conservation Association. 1988. *Interpretation: Key to the Park Experience,* Vol. 4. Washington, D.C.: National Parks and Conservation Association.

Smith, Hedrick. 1988. *The Power Game: How Washington Works.* New York: Random House.

Tilden, Freeman. 1977. *Interpreting Our Heritage.* Rev. Ed. Chapel Hill: The University of North Carolina Press.

Washington Post. 1988. *Manassas Tragedy: Paving Over the Past.* 13 March. Washington, D.C.: The Washington Post.

Interpreting Controversial Historic Sites: Insights and Strategies Applied at Custer Battlefield and the USS Arizona Memorial

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Abstract

A calm has now settled over these troubled and war torn lands. Custer Battlefield National Monument and the USS Arizona Memorial reflect the moods of human conflict, misunderstanding, and tragedy. It's here at these sites where history lives and the unmistakable specter of controversy thrives. They are of course only representative of a myriad of historic resources that face similar challenges. However, for this presentation they will serve as models in our exploration of interpreting controversial historic sites.

Introduction

Today the winds of time blow across the ravines and ridges of the Greasy Grass. Tombstones mark where soldiers fell, but few record the loss of the American Indians, little is known of where they died. To the West, nearly 4,000 miles away, waters lap gently over the skeletal remains of a once proud battleship. The USS Arizona has rested here in Pearl Harbor for nearly 50 years. It's in that sense a monument to infamy and valor. Here too the winds of time blow across the waters of Pearl Harbor, carrying with it a scent of fuel oil in the air. Almost in a fit of stubbornness the ship refuses to accept her fate. Oil continues to sporadically bubble up from the bowels of the vessel, a process that began on that fateful Sunday in December of 1941.

This paper will discuss the insights and strategies that have been developed and used by interpreters and supervisors over the past ten years at Little Big Horn and Pearl Harbor. It will give front-line interpreters techniques for interpreting controversial sites and issues.

Interpretive Appraisal

It was customary that at the end of the day interpreters would gather on a slope that overlooked the Valley of the Little Big Horn. The panorama of the battlefield filled their vision. With the sun setting gently to the west, rangers discussed interpretive experiences of the day. It was a time of measurement in which was weighed the successes and failures of our interpretation. Self-appraisal, peer coaching, and humor stimulated growth and excellence. From these discussions, strategies were formed to deal with the controversy that is part of the climatic scene of Custer's Last Stand.

As a professional interpreter, my experience over the last ten years has been developed at Custer Battlefield and the USS Arizona Memorial. A bit provincial perhaps, but I believe these parks may lay on the cutting edge of historic interpretation and controversy.

Building Bridges

The rewards of building bridges of understanding through balanced and professional presentations are obvious. They can serve to calm, but not dilute the waters of controversy. For in the final analysis it's the visitor who is the recipient of our collective wisdom.

Don Swann wrote in *Innovative Interpretation of Military Sites:* "It is the role of the interpreter to provide a balanced perspective about his or her site. Using the opportunity to give new insights about the past, we may perhaps be able to provoke visitors into a far greater understanding of War and Peace by listening to each others views."

But why should the National Park Service (NPS) interpret war? According to Gary Machlis there are three reasons for doing so:

1) Interpreting war commemorates the sacrifice of those who gave their lives in combat.

2) To interpret war is to help communicate its consequences.

3) It can help prepare us to understand future conflicts.

I might add this anecdote of a visitor after he completed his visit to the Arizona Memorial as an interpretive perspective. As the tour to the memorial came to an end the visitor approached me with a question, "How many people visit the Memorial each year?" I answered, "about 1.5 million." He replied, "Incredible! But do they realize in the next World War there will be no memorials because there will be no one left to build them!"

Assessing Your Site

To get a firm grip on understanding what controversial issues face your park, I have outlined points that may assist you in your assessment of your site.

1) Do you have an Interpretive Prospectus, Statement for Interpretation, or other interpretive planning documents? Have you read it? Do you use it as a basis for some of your interpretive programs? Do you follow the objectives stated in this document?

2) The Visitor: What questions do they most often ask? Do you take time to chat before and after a program? Do they come with preconceived ideas? If so, do you address those ideas?

3) Management: Do your supervisors provide training for historic interpretation? Do they discuss and formulate a policy for interpreting historic questions or

controversies? Do they provide adequate training and research materials for staff?

4) Do you have a park historian? If so, what functions does he or she serve? Does the historian mediate and coordinate the handling of potentially controversial issues? Do they provide resource material? If so, is it adequate?

5) Media: Who officially handles historic questions for your site when the media calls? Is the staff made aware of the potential for misquotes and misinformation with the press?

6) Staff: Does the park prefer to hire seasonals or permanents with an educational background in history? Does the park try to employ ethnic groups that may have been directly involved in the historical event at your site? Does the staff meet on a regular basis to train and discuss historical issues facing the park?

Certainly there may be more questions or categories that can shape a clearer assessment, but this will give you a start.

Before we go much further I think it's important to set the historical stage for these dramatic events. When the news of the disaster at the Little Big Horn reached the Eastern Americans it was amidst their centennial celebration in Philadelphia. The country was stunned and in profound shock. Sixty-five years later the pattern of history was repeated and the country was again shaken--this time by the news of the disaster at Pearl Harbor. Irony was there. Both battles took place on Sunday. The American forces were defeated by an enemy that was considered by most to be inferior. And the commanders of the American forces continue to this day to be embroiled in controversy of who was to blame.

Your visitors will come to you with many of these questions. Some come with a sincere interest to know. Others come with preconceived ideas and are looking to solidify their prejudices or convictions. How do you deal with these visitors? Do you give up, or can you make an honest effort to show to the visitor the many sides of the story? Can you be all things to all people? Of course not! But knowledge of your subject matter and the honesty to dispense the information fairly can go a long way in presenting a controversial military event fairly.

Controversy...A Terrible Thing?

Is controversy that surrounds a historical event a terrible thing? Some may look at it as an interpretive minefield, while others will take up the interpretive challenge and fight the good fight for understanding and compassion. The ingredients of history are here for you to discover and share. The public that comes to your site is for the most part interested and should leave wanting to know more. The mystery of the event, its personalities, and its impact on people can lend itself to the excitement you can generate. So controversy can stimulate appreciation and interest.

It's important that an interpreter working at any historic resource understand why many visitors involve themselves emotionally and spiritually in their park experience. A rule that has not failed me is to get to know your visitors.

Edward Linenthal summarized this recently in an article pertaining to the Alamo and its sesquicentennial, 1986.

> "There are numerous types of sacred patriotic sites in America: birthplaces and burial sites of various national and regional heroes, and national monuments and buildings, for example. Battle sites function as ceremonial centers on this landscape, connecting each generation with the actions of cultural heroes whose courage and willing sacrifice have provided models of devotion to the principles of the nation. Visitors to such sites, whether categorized as tourists or pilgrims (the boundary is not always clear), have exhibited the universal desire to be near a place of great power...Battle sites, like all sacred sites, are subject to veneration and defilement, and their lessons are subject to revision. They are not status symbols that convey only one constant meaning--they are very much alive and changing."

With those thoughts in mind, let's delve into some of the controversial issues that face the parks and strategies that can be formed to deal with them.

Scenarios and Solutions

When visitors arrive at a controversial historic site they may have feelings, attitudes, and opinions already formed. In an effort to explore solutions to those problems or issues you may encounter, I have selected several scenarios that I and other interpreters have personally dealt with at the USS Arizona Memorial and Custer Battlefield National Monument. Certainly there are no absolute answers to working with controversial topics, only suggestions that I have found worked successfully. Many of our visitors formulate impressions due to the media (television, radio, newspapers, and magazines) coverage they have seen, accurate or not. It's a sign of our time.

Scenario 1

As the visitor enters the USS Arizona Memorial Visitor Center, he begins to notice that the signs, brochures, and audio-program announcements are in English and Japanese. He is a veteran of the Pacific War and saw many of his fellow marines killed and wounded in the battles he participated in. At the age of 65, the memories of the war are triggered by what he sees. He is angry and distraught and this is how he arrives in front of you at the information desk. His inquiry is direct and threatening, "Why are all the signs and brochures in Japanese? After all Ranger, who won the War?"

Solution and Technique

1) Lower and soften your voice. Remain calm and speak in that manner.

2) Sympathize with his feelings of hurt at the loss of his fellow marines. If you lost someone in war, mention it. Bond with him.

3) Suggest the compassion that this nation has bestowed toward former enemies.

4) Suggest that the war has been over for 43 years and that this might be the time to reevaluate his feelings.

5) Relay to him the feelings that Japanese have shared with you. My impression is that most older Japanese are very respectful and come to the memorial with a slight reticence that they are not welcome. Whereas younger Japanese come to the memorial, not unlike young Americans, with little knowledge of the attack on Pearl Harbor or World War II. A story that might be effective here is one that left a profound impression on me. A Japanese college student, after completing his visit to the memorial, appeared to be deeply moved by what he learned and experienced. He related his feelings to me and then concluded with a simple, direct, and haunting sentence, "The Americans must hate us!"

6) Finally, explain that visitation at the memorial is very high from Japan and that these brochures have been provided to explain our version of the attack in their language. The signs and announcements have been made for the express purpose of providing information to help the tours run smoothly.

Scenario 2

Inside the museum at the USS Arizona Memorial Visitor Center is a panel that has brought more congressional letters and controversy than any other. In bold letters it reads... "A Beautifully Executed Military Maneuver." Below this statement in smaller letters is the name of Admiral Husband Kimmel, CINC Pacific Fleet 1941. However, few incensed by the panel get to that point. Here is an example of one congressional letter we received.

> Dear Congressman Yates:
>
> This is a follow-up to our discussions regarding what I believe to be an offensive plaque on the USS Arizona Memorial in Pearl Harbor, Hawaii. That plaque states that the Japanese attack on Pearl Harbor on December 7, 1941 had been..."A Beautifully Executed Military Maneuver." I reacted with anger to this description of what I have always regarded as a sneak attack,...I was further incensed because, had our men been prepared, i.e., known that we were in a state of war, the outcome could well have been very different...Describing the Japanese attack in these terms smacks of another Bitberg...My negative reaction to the statement was reinforced while I was in the hospital in Honolulu, recovering from a coronary attack that occurred a few hours after viewing this plaque, when a nurse of Japanese descent told me that the attack on December 7, 1941 was a "beautifully executed military maneuver."

In our reply we mentioned that it was Admiral Kimmel who made this comment before the Roberts Commission (a congressional investigating body on the Pearl Harbor attack), and that he was responding to the attack in the military context, not the political one.

Scenario 3

As visitors approach the visitor center at Custer Battlefield National Monument they notice mounted on the wall this inscription. "Know the Power of Peace," Black Elk.

The inscription is in English and Dakota (Sioux). This phrase has generated many congressional letters from visitors because it's viewed with contempt by its critics, in particular some members of the Little Big Horn Associates (a society that studies Custer and the Little Big Horn Battle). Their complaint stems from the fact that it was placed at the Monument just prior to 1976, the 100-year observance of the battle and that it was the result of political rather than historical motives. Further, they point out that Black Elk participated in the battle and killed, mutilated, and scalped soldiers during the battle. In that light they felt that it was hypocritical of the Park Service to sell out to an Indian interest in order to pacify Indian extremists (i.e., American Indian Movement) to insure calm relations during the observance year.

Solutions and Techniques

1) The park must take an official position on why the inscription was placed at the Monument and what purpose it serves. This should be shared with all staff members so that the explanation is uniform and accurate. This was not done while I worked there. However, we did apply some other tactics that met with mixed success.

2) I explained that Black Elk made that comment when he was an older man. He had seen great changes for the Indian during his time. War had only brought hardship, despair, and death. It was not only a lesson for he and his people, but for all people, all races, and for all times.

3) I and other interpreters tried to stress that this was not only Custer's battle, but it was jointly shared with American Indians who defended their way of life as well. The tragedy was that these two cultures clashed at Little Big Horn and both sides lost. Groups like the Little Big Horn Associates have done many things to support the park, but what must be prevented is the impression that some individuals from within this group dictate policy and determine the interpretation for that park.

Scenario 4

On June 25, 1988, the American Indian Movement, without permit or permission of the National Park Service, placed a plaque at the base of the monument that stands atop the summit of Last Stand Hill. The monument itself was placed over the mass grave of soldiers and Indian allies killed in the battle of the Little Big Horn.

The new plaque reads: "In honor of our Indian patriots who fought and defeated the U.S. Calvary in order to save our women and children from mass murder. In doing so, preserving our homelands, treaties, and sovereignty."

How would you handle this one?

1) Would you have attempted to stop them?
2) Would you have removed it?
3) How would you interpret it for visitors if it remained in place?

Solution and Techniques

The staff at Custer Battlefield in my view should be commended for the handling of this sensitive issue.

1) They allowed the plaque to stay in place while the Director, Regional Director, and Superintendent decided on their course of action. They bought time and didn't over react.

2) The plaque was moved a few weeks later to the visitor center and displayed. Visitors were then called upon to make comments regarding the plaque.

3) The American Indian Movement and other representatives of the Indian people were informed of the decision and asked to participate in developing a monument and exhibit concerning the Indian participation in the battle.

Certainly one of the greatest challenges at any controversial historic site is to present the players in a fair and objective manner. This is always difficult and can be very dangerous if not handled in a sensitive manner. When dealing with the battle of the Little Big Horn, the interpreter must be prepared to present the story objectively, particularly the personalities of Custer, Sitting Bull, and their subalterns where the myths and the stereotypes abound.

The interpreter walks through a historical minefield. Some visitors have already formulated their opinions and may be using their experience to reinforce them. The danger lies in refuting those opinions. The George Custer personality hangs over the battlefield like a dark winter cloud. It's ever present and often is the object of these preformulated opinions.

Pearl Harbor presents many of the same problems and can be equally difficult to interpret. Today's economic struggles between the United States and Japan have created increased racial tension between American and Japanese visitors. The rangers continue to receive many highly charged letters and comments on a daily basis at the visitor center. The challenge at the Arizona Memorial is to try to ease this tension by cultivating understanding between the two cultures involved, and to reinforce the concept that the people in these cultures were simply caught up by the human tragedy of war. In other words, they are like us. But this strategy isn't always successful as this congressional letter from a visitor suggest:

> Dear Senator Graham:
>
> "Last week I visited the Arizona War Memorial at Pearl Harbor. At the same time, many Japanese tourists visited this same memorial.
>
> The conduct of some of these people was insulting. They laughed, paid little attention to the Navy guide, and seemed to be making unflattering remarks (I do not understand the language), which engendered more laughter. THEIR ACTIONS HURT!"

Both at the Custer Battlefield and the USS Arizona Memorial the issue of racism is present. I have found the most effective way to deal with such an explosive issue is to confront it. Not directly but discretely. By using another persons words you can express your views safely. When I deal with racism expressed toward any race I often use these words written by Chaplain Gittlesohn in his dedication of the Iwo Jima cemetery.

> "Somewhere in this plot of ground there may lie that man who could have discovered a cure for cancer. Under one of these Christian crosses or beneath a Jewish Star of David there may rest now a man who was destined to be a great prophet. Now they lie here silently in this sacred soil, and we gather to consecrate this earth in their memory...
>
> Here lie officers and men, black and white, rich and poor...Here are Protestants, Catholics, and Jews...Here no man prefers another because of his faith or despises him because of his color. Here there are no quotas of how many from each group are admitted or allowed. Theirs is the highest and purest democracy.
>
> Any man among us, the living, who...lifts his hand in hate against a brother, or thinks himself superior to those who happen to be in minority, makes of this ceremony and of the bloody sacrifice it commemorates, an empty hollow."

Strategies

The techniques previously mentioned have been effective for me and other interpreters. There are many other ways to handle controversial historic issues so let's move on to other strategies I have found successful. Sound strategies have to be developed by supervisors and their staff for every site. To insure this process occurs, in brief, I have listed below some of the techniques that may be applicable to front-line interpreters.

1) Be knowledgeable. Read all the publications that are considered by your historian or staff members to be authoritative.

2) Be aware of the mass media and how they represent your site through their newspapers, magazines, and radio and television news.

3) Hollywood, perhaps more than any other media, has left an indelible impact on how Americans interpret history. Remember many visitors see these films and believe that the historical event that is being portrayed is factual, the so-called "true story." Movie makers have brought us *They Died With Their Boots On, Little Big Man, Tonka, From Here to Eternity*, and *The Final Countdown.* As John Ford once said, when asked about the historical accuracies of his films, "Maybe it didn't happen that way but it should have."

4) Ranger lore or accepted myths often find themselves as part of interpretive programs. They can literally destroy the integrity of a program. Rule of thumb...check out any fact you use in your talk. Don't accept a story on face value or because another interpreter said it. After all it's your reputation on the line.

5) Consistent facts must be established by the park for all interpreters to use as a reliable source for known factual statistics. An interpretive staff that doesn't comply will sacrifice its credibility. The cost of credibility due to lack of training for the sake of expediting the ranger onto the front line is one that would bring down the entire interpretive staff.

6) Lastly, try to present both sides of the story. Act as a mediator of history. Provoke the audience, let them ponder and decide. Be sensitive to the feelings people have about peace and war. Don't glorify the killing, but don't downplay the tragedy and sacrifice.

Techniques

Along with strategies that can be employed, there are techniques that can be used in conjunction with the strategies. Listed below are some of the tools I have developed to employ effective interpretation.

Role Playing

Try to place the visitor in a role he or she may not be familiar with. For example, if they don't understand what brought about the Pacific War, present them with the issues that faced the Japanese, then ask them how they might react to a similar situation. Or describe the conditions that Sioux people faced in 1876 and why they chose to fight. Personalize the experience by saying what would you have done if you were in their position. This can be applied in many ways and the applications are limitless.

Provocations

Freeman Tilden valued this technique and thought it to be an essential element of interpretation. This also can be applied in a variety of examples. In discussing Pearl Harbor I may ask a visitor, "What tactic did the Japanese use at Pearl Harbor?" The reply is generally a sneak attack. My response then would be, "Oh you mean preemptive strike?" At Custer Battlefield, I chose a writing of George Custer that described his sympathy with the Indian uprisings and his opinion that he would choose to live as an Indian and given that chance, he'd rather fight than submit to life on a reservation. This contradiction of Custer's personality presents a side of that person the visitor may not be familiar with. It opens new avenues of understanding.

Humor

I have found humor to be an effective technique in lessening the depressing moods that war evokes. At Pearl Harbor, amidst the destruction of the fleet, one participant remembered how sailors unable to fight with guns picked up tools and tossed them at low flying planes in frustration. This example expresses the human element in a form that visitors can visualize. Humor must be used sparingly and with predictable caution. When I present a program about the attack, I often ask the audience how many individuals remember hearing about the attack on their radios. Several will raise their hands. I then reply, "Did some of you notice the younger people looking around in sheer wonderment that anybody could be alive over forty seven years ago!" The audience laughs and it breaks the tension. It allows you the freedom to go on and discuss heavier topics.

Quotes

As I stated earlier, I find this technique extremely effective. It allows you to express your opinion or views on issues without your own words being used. This third person technique is a safe, effective way of opening and ending a program with a solid interpretive summation or theme.

An example of how I might express my feelings about war and peace was spoken at the USS Utah Memorial dedication by Senator Moss of Utah, "While we come here to honor those that gave their last full measure of devotion, all of us hope and pray that the time will come when we no longer need to dedicate memorials to men who died in battle, that we will dedicate memorials to men who live in peace, to all nations, and all men."

Caretakers of History

As front-line interpreters, we must remember the responsibilities we cradle as caretakers of history at the site we interpret. We can convey a sense of wonder, mystery, curiosity, tragedy, sacrifice, thus developing appreciation. Freeman Tilden once wrote:

> "Through Interpretation...Understanding
> Through Understanding...Appreciation
> Through Appreciation...Protection."

And you, my colleagues, are truly the guardians of our natural and cultural history. How well you present controversial events will determine how well our historical past is protected and understood.

We Are All Mortal

As I close this paper, I ask you to consider the effects of interpreting war and peace in the nuclear age. It has ominous implications. And as you do so, remember the words of John F. Kennedy following the Cuban Missile Crisis in 1962, when the world was brought to the edge of nuclear holocaust. Perhaps it will provide the theme for this presentation that you might embrace.

> "Our problems are man made.
> Therefore they can be solved by men.
> Across the gulfs and barriers
> that now divide us, we must remember
> that there are no permanent enemies.
>
> Let each nation choose its own future
> so long as that choice does not
> interfere with the choice of others.
>
> If we cannot end our differences,
> at least we can make the world safe
> for diversity.
>
> For in the final analysis our most
> basic common link is the fact that
> we all inhabit this planet, we all
> breathe the same air, we all cherish
> our children's future, and we are
> all mortal."
>
> John F. Kennedy, 1961

The New Course: Who Hauls the Freight? Who Pays the Way?

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Abstract

Freeman Tilden's principle of telling a whole story, of providing a whole picture, is as valid today as when it was first written. From the park standpoint, this whole picture can and should include whole pictures of natural and cultural resources, ecosystems and how they function, management concerns and techniques, and the economics of park operations.

Interpretation can and should carry its fair share of the management freight. Tilden's principles and techniques can be used to help the public understand the whole picture of parks including the park story, park management issues, and basic ecosystem principles that apply in parks and at home.

There's a tremendous opportunity for interpreters to broaden their thinking, to consider themselves the marketing arm of management, and to expand program offerings to include a much larger number of leisure services.

Introduction...The Aim of Interpretation Is Provocation

This presentation is offered because the author has three basic concerns about interpretation. It should generate open discussion about the future direction of interpretation.

1) Has interpretation and interpreters lost direction? If so, is the loss because Freeman Tilden's principles are no longer valid or because interpreters aren't applying them properly?

2) Interpretation is often the first item cut from the budget in time of financial crisis. Why does that happen? What can interpreters do to change that pattern?

3) Park interpretation competes with other interpretive opportunities for public leisure time. For example, park interpretation in San Diego competes with Sea World, the Zoo and wine country tours. In Milwaukee, park interpretation competes with brewery tours. Pubic sector interpretation is in competition with private sector interpretation for public use, dollars, and presentation quality. Given this competition for public leisure time:

   a) Are park interpretive products professional and contemporary enough to compete effectively for the public's leisure time?

   b) If park interpretation is professional enough to compete effectively, should a fee be charged for at least some of the programs?

c) Should revenue from fee programs be used to offset management costs or be used to benefit the interpretive program? Should the funds go to the general fund, to the park, or to interpretation directly?

These three concerns are related, but don't logically follow in sequential order. Following is a brief summary of each item of concern.

Direction

In *Interpreting Our Heritage*, Freeman Tilden speaks regularly of guiding principles, underlying philosophy, and fundamentals. For example:

> (The interpreter) "goes beyond the apparent to the real, beyond a part to the whole, beyond a truth to a more important truth."
>
> "Interpretation is the revelation of a larger truth that lies behind any statement of fact."
>
> "Not the least of the fruits of adequate interpretation is the certainty that it leads directly toward the very preservation of the treasure itself...indeed such a result may be the most important end of our interpretation, for what we cannot protect we are destined to lose."

People are concerned with many issues these days: slow growth, sensitive lands, endangered species, toxic waste, the national debt, government spending, environmentally induced cancer, and the value of parks and open space. Discussions of issues such as these appeal to the whole person in terms they can readily relate to in the park and at home. Discussions of park resources, park ecosystems, and park management concerns related to similar personal issues can be used to present a whole, contemporary picture of where and how parks fit in people's lives.

A specific example might help. Consider the following:

Parks: Natural
Resource: Forest
Media: Personal Presentation
Concepts: Forests are basically the same here as they are at your home.

They have the same basic requirements of sun, soil, air, and water to survive.

They benefit you personally by providing shade for cooling your environment, oxygen, wind breaks, habitat, and visual pleasure to name a few things.

Today, most if not all forests require management if you, your children, and their children are to enjoy them.

> Management costs money and requires land-use decisions.
>
> When you decide to landscape your yard at home so that you and the neighbors can enjoy an evening with shrimp on the barbe, you are making management decisions much like park managers make every day. Only the scale is different.

Freeman Tilden's principle of telling a whole story, of providing a whole picture, is as valid today as when it was first written. From the park standpoint, this whole picture can and should include whole pictures of natural and cultural resources, ecosystems and how they function, management concerns and techniques, and the economics of park operations.

Interpretation can and should carry its fair share of the management freight. Tilden's principles and techniques can be used to help the public understand the whole picture of parks including the park story, park management issues and basic ecosystem principles that apply in parks and at home.

Management

Interpretation can and should provide marketing services for management. No business or nonprofit organization would operate without a marketing department. Communications used in interpretation are the same as those used in advertising, public relations, and marketing. The media is the same. The message is different.

Some organizations, such as the U.S. Forest Service, have a separate Office of Information to handle public information communications. However, interpreters meet the public face to face daily and can provide similar services to help communicate management concerns, ideas, and techniques in a very personal way. The challenge is how to integrate the message sensitively and sensibly into the interpretive program.

There is a tremendous opportunity for interpreters to broaden their thinking, to consider themselves the marketing arm of management, and to expand program offerings to include a much larger number of leisure services. For example, in your interpretive program have you considered programs like:

- How to select arid land native plants that work well in home landscaping.
- How recycled water can be used in landscape irrigation.
- Using wetlands to process wastewater.
- Solar power for your home; come see our visitor center.
- People watching in parks; how park managers deal with crowds.
- To use or preserve; land use and wildlife management issues.
- Cleanup, paint up, fix up; how maintenance takes care of your park.

No business or organization can survive without marketing its services or product. The product in our case would be preservation of the park resource, a strong understanding and concern for a balanced ecosystem that carries over to the voting booth, and public advocacy for an adequately staffed and well cared for park.

Fee Services

Today, Leisure Services (including interpretation) is a multibillion-dollar business. Statistical abstracts of the U.S. Government in 1983-84 reported an annual leisure spending of over $262 billion. Of that amount, only 0.5 percent ($1.2 billion) was generated by all levels of government--local state and federal public recreation operations.

Perhaps it's time for interpreters to begin thinking about market share and to consider the public as customers as well as visitors. Perhaps it's time for interpretation to begin charging for at least part of its services and to begin generating its fair share of income to offset operations expenses.

Can interpretation be fun? Do you have the ability to do interpretive programs that are fun to generate funds to do programs that are important? If you provide interpretive or leisure services for a fee, can your program quality compete effectively with the commercial sector? Are your fees competitive? Do you consider charging for interpretive services as charging the people twice; once in taxes and once for the service? Is that a valid assumption?

In short, there are leisure services dollars available to support interpretive and park operations budgets. However, interpreters must be capable of producing top-quality presentations that can compete in cost and quality with their commercial counterparts and that meet public needs rather than the interpreters desires.

The other side of the coin, of course, is that in the past interpreters have primarily been employed by governmental organizations. Today, given the tremendous growth in the leisure services sector ($262 billion) and the limited opportunities in the governmental sector ($1.2 billion), employment opportunities, financial opportunities, and advancement potential seem to favor the private sector. Some commercial interpretive opportunities might include:

- That's A Lot Of Hot Air! Hot Air Ballooning: An Interpretive Platform.
- Outdoor Resorts of America: Interpretation for RV Parks.
- Exotic Ports of Call: Cruise Ship Interpretation.
- Where's My Duckie? National Recreation and Park Association Adventure Club interpretation.
- Resorts and the Forest Service: Interpretation for Resort Owners. Contact the Superior National Forest. They already have a program going.

Conclusion

Freeman Tilden's principles seem as applicable today as when they were written, particularly when applied to telling a whole story. However, to compete in today's market and to meet the needs of a sophisticated public, interpreters need to:

1) Produce quality programs that can compete with commercial interpretation.
2) Develop a unified story line so that each interpretive program dovetails with the next to tell a whole story.
3) Produce programs that help solve management problems.
4) Develop a balance between free services and fee services so that at least a portion of the interpretive services are revenue generating.
5) Think of themselves as the marketing arm of management and provide leisure services, one of which is interpretation.
6) Accept their fair share of management responsibility and actively contribute to park management decisions.

In short, interpretation should haul its fair share of the management freight and pay its fair share of operational costs.

Bibliography

Crowley, Kate. 1988. TEAMWORK: Resorts and the Forest Service. *Parks and Recreation*. August 1988.

Merriman, Tim. 1987. Nature Center Interpretation in a Recession Economy. *The Interpreter*. Spring 1987.

Merriman, Tim. 1988. Biology and Business: The New Marketing Mix. *Be Resourceful*. July/August 1988.

More, Muriel E. 1983. A Guide to Effective Interpretation--What the Forest Service Can Learn From Marketing Research. *USDA--Forest Service*. 1983.

Osterbauer, Ron. 1988. Has the Mission Gone Astray--Where Does It Need to Go? *National Association of Interpretation*. Vol. 1, No. 1. 1988.

Tilden, Freeman. *Interpreting Our Heritage*. The University of North Carolina Press. Third Edition. 1978.

Vander Stoep, Gail A. 1988. Interpretation's Place in the Resource Manager's Toolkit. *Be Resourceful*. July/August 1988.

Van Matre, Steve. 1988. Environmental Education: Mission Gone Astray. *National Association of Interpretation.* Vol. 1, No. 1. 1988.

Effects of Integrated Interpretive Programs on Persons With and Without Disabilities

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Abstract

This research* attempts to answer the questions of whether persons with physical and mental disabilities can successfully participate in an integrated interpretation program and what the physical, social, and cognitive effects resulting from that participation are. The research develops and validates a behavioral technology to facilitate the integration of children with physical and mental disabilities into interpretation environments. Analysis methods included: a social acceptance scale, cognitive surveys, task analytic assessments, behavioral observation of social interaction using partial interval time sampling, and interviews with staff.

Results indicate significant gains in: understanding environmental concepts, in physical skill acquisition (snowshoeing, for example), in social interaction levels, and in peer acceptance between persons with and without disabilities. A set of strategies is proposed to overcome the administrative, programmatic, and social obstacles to integrated interpretation. These strategies include cooperative learning and goal structuring, special friends training, trainer advocate volunteers, facility and program adaptations, and staff training in integration techniques.

Introduction

Traditional natural resource interpretation facilities and programs rarely include persons with physical and mental disabilities and therefore don't serve a significant segment of the population. This is important when one considers that there are approximately 30 million Americans (not including the elderly) who have some form of disability. In preparation for this research project a needs assessment was conducted with 60 interpretive facilities and programs in Minnesota to determine the extent of participation by persons with disabilities. We found that over 90 percent of these facilities had never received training in working with special populations (not even attendance at one workshop).

Some segregated programs and facilities do exist which serve a minority of those with disabilities. Examples are "trails for the handicapped," programs solely for special education classes or groups from residential homes for the retarded, and one-time programs for a selected disability group. But, social and financial forces are making segregated programs too isolationist and too expensive to staff. Integrated interpretive programs and facilities would offer opportunities for everyone to become aware of and appreciate the natural and cultural resources interpretive facilities offer. They would also provide opportunities for persons with disabilities to interact with nondisabled peers, opportunities for persons with disabilities to become acquainted with community leisure and educational resources, and the opportunity for resource management agencies to serve a larger constituency.

This paper reports on a continuing series of research and demonstration projects aimed at answering the questions of whether persons with physical and mental disabilities can successfully participate in an integrated interpretation program and what the physical, social, and cognitive effects resulting from that participation are. This research develops and validates a behavioral technology to facilitate the integration of children with physical and mental disabilities into interpretation environments. The studies discussed in this paper evaluate the effects of a package of strategies (i.e., cooperative learning structure, special friends training, trainer advocates) on the cognitive and physical skill outcomes, the attitudes of nondisabled peers, and the social interaction between persons with and without disabilities.

Research has documented some of the cognitive and affective influences of education in interpretive settings (Backman and Crompton, 1984; Crompton and Sellar, 1980; Jones and McAvoy, 1987). Much of the attention paid to persons with disabilities in the interpretation/outdoor education/environmental education literature has focused on segregated programs or programs specifically aimed at selected disability groups. Studies and articles by Beechel (1975), Brannan (1982), Hillman and Appel (1978), Robb (1984), and Seven (1980) all document the positive personal and social benefits (to the disabled) of participation in outdoor programs. But, as indicated by Farbman and Ellis (1987) in their summary of issues and recommendations to the President's Commission on Americans Outdoors, there are still significant deficiencies in program and facility accessibility in outdoor recreation for persons with disabilities as well as a lack of involvement of disabled consumers in program planning and participation.

Integration is considered both a goal and a process. The goal is to ensure that persons with disabilities are accepted as members of the community, are permitted to participate in the activities enjoyed by other members of society, and are able to participate in community services alongside their nondisabled peers (Schleien and Ray, 1988). The process of facilitating integration is not easy because it requires social as well as physical integration before mutually beneficial relationships and outcomes can occur (Voeltz et. al., 1983). Initially developed in the special education and vocational training areas, the philosophy and technology of integration has been applied to: community leisure, education and physical education settings (Schleien and Ray, 1988; Schleien et. al., 1983; Schleien et. al., 1985; Wehman and Schleien, 1981), camp programs (Braaten, 1977), and wilderness trip programs (McAvoy, 1982; Shurke and Lais, 1982).

The research literature on integration indicates three primary strategies or technologies in the process of integrating community education and leisure settings: cooperative learning, special friends training, and trainer advocates. These technologies were adapted and employed in this study. Cooperative learning is an educational process where learners are encouraged to work in groups toward achieving group educational goals. Social interaction and sharing of information is encouraged and success is achieved if, and only if, all the participants reach the group goal. Developed by Johnson and Johnson (1984) and Johnson et. al. (1985), the cooperative learning structure allows persons with disabilities the opportunity for participation.

Special friends training (Voeltz et. al., 1983) prepares persons, both disabled and nondisabled, for social interaction with each other and is especially aimed at helping nondisabled peers overcome their hesitancy about being friends with a person who is disabled. The trainer advocate concept was developed by Wehman (Wehman and Schleien, 1981). The trainer advocate supports the instructor (interpreter) by assisting persons with disabilities to participate in the activity, reinforcing social interaction and positive behavior, and assisting in any mobility problems.

Methods

During 1987 and early 1988, five demonstration/research projects were conducted at nature interpretive facilities in Minnesota. The facilities included interpretive centers managed by a county parks system, a municipality, a private foundation, and a school district. An integrated interpretive program was developed at each location. The programs ranged in length and format from a 1-1/2 hour once a week for nine weeks program; to a two hour a week for six weeks program; to a more intensive four hours a day, five days a week for two weeks program. Program titles included *Winter Ecology and Snowshoeing, Prairie Life and Restoration, Habitat Changes in Spring,* and *Journeys--How Plants and Animals Travel.* The programs were led by interpretive agency staff with assistance from university faculty and students.

Participants for the programs and the research (N=68) were recruited through the interpretive agency, local schools, and local youth groups like the Girl Scouts. Participants ranged in age from 8-15. The disabilities represented included cerebral palsy, spina bifida, hearing impairments, Down's syndrome, autism, mental retardation, and children with developmental disabilities and severe handicaps. A typical program size was four persons with disabilities teamed up with eight nondisabled peers.

The affective, cognitive, and physical skill outcomes were studied in a number of different ways. Not all subjects were assessed with all the instruments due to the intensity of the instruments used and the desire on the part of the researchers to not disrupt the programs with intrusive data collection methods. The data collection methods included: behavioral observation of social interaction using partial interval time sampling, peer acceptance surveys, a cognitive survey, task analytic assessments of physical skill acquisition, and interviews with staff. Data analysis methods included visual data inspection through graphed multiple baseline probes in a single subject research design, t-test statistics to compare means in cognitive and peer acceptance scale scores pre- and post-program, and qualitative analysis of interpretive staff views regarding integration pre- and post-program.

The task analytic assessment instrument was used in a multiple probe baseline single subject research design to measure the acquisition of an outdoor skill, in this case snowshoeing. Using task analytic methods developed by Knapczyk (1975) and Nietupski (1984) and adapted by Schleien and Ray (1988), the snowshoeing skills were broken down into 65 distinct steps or tasks. Subjects (4) were observed attempting to accomplish the tasks without treatment (instruction and the three integration strategies of cooperative learning, special friends, and trainer advocates). After a baseline of three pretreatment observations the treatment was initiated and observations continued. Data was collected by trained observers. Interrater reliability was accomplished on 25 percent of the observations and averaged 90-95 percent. The snowshoe tasks ranged from the basics of putting the feet into the bindings and strapping on the binding to step turns and stepping over obstacles. The children tested were 12-13 year olds with Down's syndrome and accompanying mental retardation, deficiencies in coordination, and lack of physical endurance.

The social acceptance aspects of the study were measured by two methods. A peer acceptance scale developed by Voeltz (1980, 1982) was adapted to an outdoor context and was administered to the nondisabled peers before the integrated programs began, at intervals throughout the program and at the conclusion of the program after the special friends training and the participation with persons with disabilities. The test was designed to evaluate changes in attitude or level of acceptance as demonstrated by persons without disabilities toward their peers with disabilities. A social interaction toll and observation technique (Schleien and Ray, 1988) was used to observe and record the number and type of social interactions between disabled and nondisabled peers. Trained behavioral researchers observed the social interactions on a time sampling framework where each group of participants were observed for so many minutes on a set schedule. Interobserver reliability was checked and averaged 85-90 percent.

The cognitive gains for nondisabled peers were measured in one program (16 persons) with a knowledge test developed around the concepts and information taught in that program. The participants were randomly placed in two separate groups, one integrated and one group of only nondisabled children. The tests were given to the children before the program and again after the six-week program. The naturalists, curriculum, and material were identical in both programs. The purpose of this part of the research was to see if integrating persons with disabilities into a program causes the cognitive attainment of the nondisabled peers to be less than those in a nonintegrated group.

Results

A general finding of this research project has been that integrated interpretive programs are possible and are effective in gaining the interest and enthusiasm of persons with and without disabilities. Although sometimes reluctant initially, interpretive staff in all of these projects were willing and able to adjust their interpretive styles to incorporate the integration strategies described in this paper. A general observation is that both the disabled and nondisabled participants in these projects were extremely pleased with the experience.

The persons with disabilities were able to be active participants in these programs. The extent of participation varied with the disabilities and with the tasks, but appropriate participation levels were attained in all of the programs. The programs (and the nondisabled peers) were not significantly restricted due to the presence of persons with disabilities. Some programs had to be adapted to accommodate disabilities, and some persons with disabilities only achieved partial participation, but the program goals were still achieved by the interpreters and the participants.

The task analysis assessment process indicated that persons with disabilities (in this case Down's syndrome) can successfully acquire leisure outdoor skills like snowshoeing. The data in Table 1 is an example, and it illustrates the impact of an integrated instructional program which included the package of strategies used in the study (cooperative learning, special friends, trainer advocates). In the Table, two persons with mental retardation were observed three times in each of the three categories of snowshoeing skills (preparation, basic, and advanced) prior to introducing the treatment of instruction and the integration strategies. The Table indicates that they generally could accomplish only a small percentage of the task analytic steps prior to implementing the treatment (the dotted line). After the treatment the percentage of task analytic steps accomplished increased significantly in all three categories of skills and stayed high throughout the program.

This indicated that persons with mental retardation can acquire outdoor skills that are part of many interpretive programs (skills like snowshoeing, skiing, canoeing, hiking, collecting samples). It also indicated that interpretive programs can teach life-long outdoor leisure skills to persons with developmental disabilities, skills which can add substantially to the quality of life.

Levels of social interaction between disabled and nondisabled peers increased in all the programs studies. A t-test showed significant increases in the frequency of social interactions per minute observed from a baseline phase to the postintervention phase of the programs. The levels of socially appropriate and inappropriate behavior tended to vary from one activity to the other and from one day to the other. Some decreases in socially inappropriate behavior were observed. There was a positive change in the attitudes of the nondisabled peers as reported in the peer acceptance scale. The peer acceptance levels increased significantly during the integrated programs. These increases in the acceptance scale appear to indicate an increased understanding and tolerance of capabilities and needs of persons with disabilities.

The cognitive gains of participants were measured in one program. Two groups (an integrated group and one with able-bodied participants only) were given the same interpretive program over a period of six weeks. A cognitive pre- and post-test measured knowledge about the subject material in the program. Both the integrated and the segregated groups had statistically significant gains (at the .01 level) in knowledge as measured by the pre- and post-tests. There wasn't a significant difference between the knowledge gained in each group. Even though the groups were small (16), this data can help dispel the notion that integration drags down the cognitive achievement level of the nondisabled peers in an integrated group.

Discussion

The research reported in this paper is continuing and is just a start in studying the effects of integrated interpretive programs. Researching these effects is difficult because too much intrusion by researchers and observers has the potential of ruining the interpretive experience of both the disabled and nondisabled participants, as well as placing a burden on the interpreter. Further research is needed to investigate the potency of selected social integration techniques which, heretofore, have been applied successfully within a package. Is it the cooperative learning, the special friends, or the trainer advocates that are most important to the integration process? Which type of groupings (dyads, triads, quads) is most effective in integrated programs? Also, research is needed in designing instruments and techniques to measure cognitive effects that interpretive programs can have on persons with mental disabilities.

There are a number of obstacles that often impede agencies and staff in implementing integrated interpretive programs. These obstacles were discussed in detail by Gregoire and Freimund (1987) in a prior article reporting preliminary results of this study project. These include architectural, attitudinal, administrative, and programmatic obstacles. Architectural obstacles include inaccessible buildings, trails, and teaching/interpretive stations. They can usually be overcome by inventorying the accessibility of a facility, by adapting programs, and by adapting certain areas to make at least basic facilities accessible to everyone.

Attitudinal, administrative, and programmatic obstacles are more difficult to overcome because they are not as objective as facility characteristics. These obstacles often revolve around the attitudes of staff, administrators, and the general public and can often be complex. The attitudes that participants with disabilities will hold back the learning opportunity of others, that negative behaviors are contagious, that integrating programs takes too much money and too much time, that there is no integrated curriculum or program, and that the staff isn't comfortable working with persons with disabilities are fairly common in interpretive agencies.

The following is a list and explanation of five integration strategies for interpretation that have been developed as a result of this project. The strategies incorporate the philosophical stance of Tilden (1967) and agencies like the National Park Service (Dame, 1985), the practical positions of prior writers (Gregoire and Freimund, 1987; Lais, 1987), and the results of this research.

1) *The emphasis of the program should be on awareness, understanding, and appreciation, not the accumulation of facts.*

If the primary goal of an interpretive program is to cram as many facts as possible as quickly as possible into the heads of visitors, then certain persons--especially those with disabilities--are going to have difficulty succeeding. Obstacles to integration such as lack of time, staff, and facilities can be overcome if an agency staff is willing to rethink agency priorities and goals. Less emphasis on the accumulation of facts and more emphasis on creating awareness, understanding, and appreciation can make integration possible. If an agency adopts integrated interpretation as a primary goal then the staff, funding, and facilities will become available. This research indicates that integrated interpretation is possible if the sponsoring agency is willing to implement the necessary conditions.

2) *The interpretive agency and staff must respect the dignity of persons with disabilities and open lines of communication to the disabled community.*

This involves networking with community agencies and organizations that serve persons with disabilities to get their ideas and support. It includes examining promotional material to see if it encourages participation for varying levels of ability. Staff have to be trained to not avoid or patronize persons with disabilities, but to appropriately communicate with them in language and gestures. Participation should be available for everyone regardless of ability level.

3) *A cooperative learning structure is an effective educational method in integrated interpretive programs.*

The individualistic and competitive learning styles employed by many typical interpretive programs don't work well with persons with mental or physical disabilities. The noncompetitive, group learning style allows persons of varied ability levels an opportunity to succeed. The strategy of teaming people of differing abilities into dyads, triads, or quads for activities is the most effective in realizing learning and social interaction goals. Interpreters have to be innovative in finding novel ways for all participants to contribute, in emphasizing the value of effort and nonphysical accomplishments, and in recognizing that partial participation is appropriate for some participants. Instead of being the "giver of information," the interpreter in a cooperative structure: organizes the group, helps the group define a group goal that can be accomplished, provides materials and information for the group to share, encourages participation by the entire group, sets norms for group interaction, gives feedback to the group and to each participant, and rewards the group for successful completion of the task.

4) *The nondisabled peers in integrated programs should receive "special friends" training on how to interact with persons with disabilities.*

Much of the social isolation perceived by persons with disabilities is caused by their nondisabled peers feeling uncomfortable and at a loss for how to interact with or communicate with them. The special friends training will increase participants' awareness of individuals with disabilities so that they can appreciate the disabled person as a peer who is more like themselves than different, and who deserves the same opportunities and considerations as other nondisabled peers. Special friends training also helps nondisabled peers feel more comfortable around their disabled peers and shows them how to interact meaningfully with their disabled peers. This can be done with a slide show illustrating interactions between persons with and without disabilities, an explanation of how to be a friend, how to communicate with a disabled friend, and why integration is supported. Activities which make people aware of some of the difficulties which a disabled peer might have in the outdoor setting can also be provided. For example, blindfolding participants for a guided hike would help participants understand the limitations and advantages of a person with visual impairments and also how to provide assistance as a friend.

5) *Trainer advocate volunteers are needed to supplement the interpreter by assisting a person with disabilities in the interpretive activity and in facilitating interactions within an interpretive setting.*

Trainer advocates (trained volunteers, interns, teachers, parents) are at programs to enable the person with a disability to participate more fully in the interpretive activity. They relieve the interpreter of having to spend the increased time and attention that many persons with disabilities demand so the interpreter can concentrate on the entire group and program components. Remaining as unobtrusive as possible, the trainer advocates observe the integrated groups. They intervene to reinforce positive interaction between able-bodied and disabled peers, reinforce appropriate behavior and discourage negative behavior, encourage cooperation and group interaction, assist the interpreter in instruction if needed, assist in the movement of wheelchairs and other mobility situations, and intervene to assist a disabled participant if necessary. Trainer advocates can be volunteers, but they must be trained and provided with feedback so they develop the right blend of intervention when needed and yet remain unobtrusive when not needed.

The research and demonstration projects reported here indicate that the integration of persons with and without disabilities can be accomplished in interpretation settings. The steps or conditions leading to this integration include:

1) Facilities and programs must be physically and socially accessible to everyone regardless of ability level.
2) The interpretive goals of programs and facilities must extend beyond the accumulation of facts toward creating increased social interaction and a deeper sense of awareness, understanding, and appreciation of environmental and cultural resources.
3) Staff and volunteers must be trained in integration strategies.

If these conditions are met then the significant increases in affective, cognitive, and physical domains reported in this study can be realized. In addition, the interpretive field will be appropriately serving a significant segment of the population that's now largely being ignored in most interpretive programs.

Bibliography

Backman, S. and J. Crompton. 1984. Education Experiences Contribute to Cognitive Development. *Journal of Environmental Education.*,16(2), 4-13.

Beechel, J. 1975. Interpretation for Handicapped Persons. *Journal of Environmental Education,* 6(4), 34-44.

Braaten, J. 1977. The Integration of Moderately Retarded Children into Regular Residential Camps--a Demonstration Program. *Leisurability,* 4(3), 27-31.

Brannan, S. 1982. Outdoor Education for the Handicapped. *The Interpreter,* Fall, 12-13.

Crompton, J.L. and C. Sellar. 1980. Do Outdoor Education Experiences Contribute to Positive Development in the Affective Domain? *Journal of Environmental Education,* 12(4), 21-29.

Dame, V.D. 1985. The Role and Responsibility of Interpretation as a Function of a Total Park Operation. *Trends,* 22(4), 2-7.

Farbman, A.H. and W.K. Ellis. 1987. Accessibility and Outdoor Recreation for Persons with Disabilities. *Therapeutic Recreation Journal,* 21(1), 70-76.

Gregoire, J. and T.W. Freimund. 1987. Bridging the Gap: Gateways to Integrating Individuals with Disabilities into Natural and Historical Programs and Environments. *Proceedings of National Interpreters Workshop,* pp. 58-66.

Hillman, W.A. and M.J. Appel. 1978. Camping and Environmental Education for Handicapped Children and Youth. *Therapeutic Recreation Journal,* 12(4), 6-8.

Johnson, D.W., R.T. Johnson, L.A. Buckman and P.S. Richards. 1985. The Effect of Prolonged Implementation of Cooperative Learning on Social Support within the Classroom. *The Journal of Psychology,* 119(5), 405-411.

Johnson, D.W. and R.T. Johnson. 1984. Building Acceptance of Differences between Handicapped and Nonhandicapped Students: The Effects of Cooperative and Individualistic Instruction. *The Journal of Social Psychology,* 122, 257-267.

Jones, P.E. and L.H. McAvoy. 1987. An Evaluation of Wilderness User Education Program: A Cognitive and Behavioral Analysis. *Proceedings of National Interpreters Workshop,* 56-63.

Knapcyzk, D.R. 1975. Task Analytic Assessment of Severe Learning Problems. *Education and Training of the Mentally Retarded,* 10, 74-77.

Lais, G. 1987. Seven Suggestions for Integrating People with Differing Abilities. In G. Lais (ed.) *Wilderness Inquiry II Staff Manual,* Minneapolis, MN.

McAvoy, L. 1982. Management Components in Therapeutic Outdoor Adventure Programs. *Therapeutic Recreation Journal,* 16(4), 13-20.

Nietupski, J., S. Hamre-Nietupski and B. Ayers. 1984. Review of Task Analytic Leisure Skill Training Efforts: Practitioner Implications and Future Research Needs. *Journal of the Association for Persons with Severe Handicaps,* 9(2), 88-97.

Robb, G.M. 1984. Outdoor Education--An Alternative to Learning for Children with Special Needs. *The Bradford Papers,* IV, 49-53.

Schleien, S.J. and M.T. Ray. 1988. *Community Recreation and Persons with Disabilities.* Baltimore: Paul H. Brooks Publishing.

Schleien, S.J., K.D. Olson, N.C. Rogers, and M.E. McLafferty. 1985. Integrating Children with Severe Handicaps into Recreation and Physical Education Programs. *Journal of Park and Recreation Administration,* 3(1), 50-66.

Schleien, S.J., N.J. Certo, and A. Muccino. 1984. Acquisition of Leisure Skills by a Severely Handicapped Adolescent: A Data-based Leisure Skill Instructional Program. *Education and Training of the Mentally Retarded,* 19(4), 297-305.

Schurke, P., and G. Lais. 1982. Bringing People Together in the Wilderness. *The Bradford Papers,* II, 52-63.

Seven, S.M. 1980. Environmental Interpretation for the Visually Impaired. *Journal of Environmental Education,* 11(4), 37-40.

Tilden, F. 1967. *Interpreting Our Heritage.* Chapel Hill: University of North Carolina Press.

Voeltz, L.M., N. Hemphill, S. Brown, G. Kishi, R. Klein, R. Fruehling, G. Levy, J. Collie and C. Kube. 1983. *The Special Friends Program: A Trainers Manual for Integrated School Settings.* Honolulu: Department of Special Education, University of Hawaii.

Voeltz, L.M. 1982. Effects of Structured Interactions with Severely Handicapped Peers on Children's Attitudes. *American Journal of Mental Deficiency,* 86, 380-390.

Voeltz, L.M. 1980. Children's Attitudes Toward Handicapped Peers. *American Journal of Mental Deficiency,* 84(5), 455-464.

Wehman, P. and S. Schleien. 1981. *Leisure Programs for Handicapped Persons: Adaptations, Techniques, and Curriculum.* Austin, Texas: PRO-ED.

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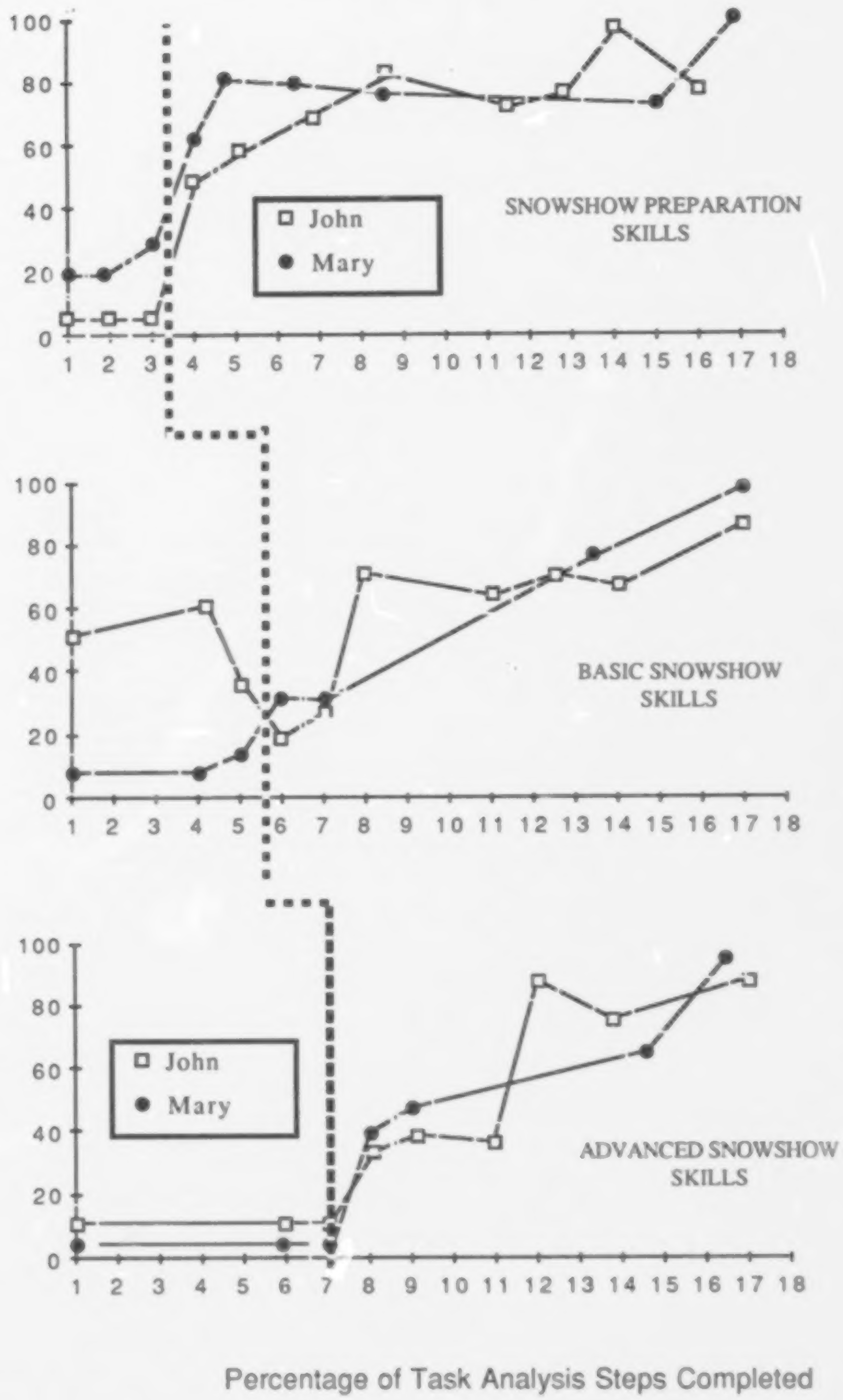
Table 1. Multiple Probe Baseline Design for Snowshoeing Skills



Educational Trends for Interpretation

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Abstract

Schools across the country are adapting the Madeline Hunter theories of education into practice. This is an awareness session to acquaint interpretive/environmental education centers with a model of instruction and the relationship this model could have with strengthening a school/interpretive center relationship. Hunter's model of instruction includes content, learned behavior, and teacher behavior decisions. Principles of learning are behaviors the teacher will practice to aid in the learning process of students.

Introduction

There have been a great deal of changes and trends in our educational system during the past ten years. One of these trends of school improvement has been the training and adoption of Madeline Hunter's theories of education into practice. Across the country the names of these programs range from simply Hunter Theory or Mastery Teaching to Instructional Theory into Practice.

Although the names adopted by local and state school boards vary greatly, the content for educational practitioners is based on the work of Madeline Hunter. For this presentation the name referred to will be the Hunter Model. In basic form, the Hunter Model is the application of sound educational theories into practice at the classroom level. In higher form, the Hunter Model is a sequence of decision-making events the teacher is involved in to optimize an individual student's learning.

Interpretive/environmental education (EE) facilities providing significant experiences to schools are usually seeking new ideas and approaches to increase the effectiveness of their programming efforts.

If schools are adopting educational trends such as the Hunter Model and interpretive centers are seeking to improve school programming, then it makes sense for interpretive centers to understand the Hunter Model and its role in the interpretive center/school program relationship.

When conducting programs for schools, do you...

- Monitor individuals closely to see if everyone is participating in the learning?
- Ask questions to assess the learning throughout the program?
- Involve the students in active participation?

- Involve students in higher-level thinking skills?

If you can answer yes to one or more of the above questions, you are already practicing segments of the latest national trends in educational practice.

An interpretive/EE center demonstrating techniques of the Hunter Theory could use the methods to do the following:

1) Establish/enhance credibility with schools

2) Recognize and coordinate common goals and terminology

3) Improve teaching effectiveness of your on-site program

4) Establish a cornerstone for staff development

To help focus your learning during the presentation of the following concepts, please write the name or describe for yourself a particular program or program unit you conduct for schools that you would like to improve.

A Model of Instruction

There are three major decisions to be made by the teacher for the education of students to take place.

1) *Content decisions--"What will be taught"*

This doesn't just mean a decision to teach aquatic study, insects, or ecological concepts. It also means to identify goals, objectives, levels of complexity, levels of difficulty, areas of cognitive skill development, areas of effective skills development, and a diagnosis of the learners for each of the study units. This content decision process is called the task analysis, and isn't as cumbersome as it may seem. For example, when you first meet a group of students, you may ask them introductory questions so you can decide at what level to begin teaching. This is diagnosing the students and is part of the task analysis.

In the more formal classroom, a teacher's content decision making will involve a task analysis (setting goals appropriate to the learners), diagnosis (what level are the students), arrangement of students into compatible instructional groups, prescription (sequence of learning), determination of the levels of difficulty, and Bloom's Taxonomy (level of complexity).

2) *Learner Behavior Decisions*

The second major decision facing the educator is what behavior involvement will be required of the student. The educator must decide which side of the brain will be involved (left-right brain theory) and during what part of the unit. What types of learning methods (input) will the students be involved in, such as lectures, reading, AV productions, discussions, or field trips. Will it be an individual or group activity?

An interpreter is involved in learner behavior decisions when a program is conducted using an introductory slide presentation, walk through the exhibit area, outdoor walk, and hands-on activity to demonstrate concepts. These are the behaviors expected of the students in the previously identified content decision.

Another aspect is the output expected of the student. The output is what can be perceived by the teacher to determine to what extent the objectives of the learning experience have been achieved.

3) *Teacher Behavior Decision*

The third decision in this model of instruction is for the teacher to identify what behavior he/she will do to assist in the educational process. Practicing successful teaching techniques and methods will aid in the achievement of the content goals. These techniques within the Hunter Model are referred to as Principles of Learning. Space does not permit an exhaustive list and description of the Principles of Learning, but a sample is provided to allow the reader to connect the principles of learning with interpretive programs.

a) Motivation

Motivation is a student's intent to learn. For those of us who have worked in the interpretive field, we have had to face two areas concerning motivation. There has always been the general assumption that students visiting our programs are already highly motivated to be there. This assumption is one reason why many groups come unprepared and why those on the outside of interpretation think we are always having fun! As interpreters we have assumed too many times that the students will become motivated to learn just by "being outdoors with us." For some students this may be true, but for others it's not true, especially if it's raining, too hot, or buggy.

Many interpretive programs today are involved in previsitation orientation materials, school visits, and other preparatory experiences. These activities should assist in providing motivation; however, there is a point to be taken within the principles of learning. As motivation is increased to optimum, learning increases, but if motivation exceeds optimum, anxiety interferes with learning. On one occasion at a nature center, the students were so prepped and hyped that the interpreter had to deal with such excitement it reminded her of a bunch of chipmunks bouncing down the trail. The students were over-motivated, and learning was impeded.

b) Active Participation

This is a principle of learning that interpreters and EE folks tend to be experts at. Interpreters have invented, designed, and performed student-oriented activities for just about every conceivable concept or unit of study. So why spend time here? Because within the principles of learning we need to be reminded of the little details that can help us truly use the concept of active participation. Active participation doesn't just mean playing a predator-prey game in a large field. The key to active participation is not solely physical activity, but as defined is most importantly the involvement of the student in learning. This involvement is identified as covert and overt behavior. Covert behavior is what we can't see, but is taking place. An example is taking time to think before responding to a question. Covert activity is an individual's time to think, write, or process the learning experience. Covert activity is required before overt activity can take place. One of the teacher's roles is to monitor covert activity, to see that it's taking place. One does this by requesting an overt response.

Active participation is more successful when covert activity precedes overt activity; a variety of techniques are used, modeling the involvement occurs, and students are held accountable (students may be called upon for answers).

The Principles of Learning are extensive and include additional motivational techniques, retention theory (retaining the learning), transfer theory (process of old learning accelerating new learning is positive transfer), reinforcement, practice theory, and dignifying learning error. Each of these principles have direct relativity to any interpretive program and especially those involved with schools.

Lesson Designs

The results of the three major aspects of the model of instruction are lesson designs. Teacher decisions about content, learned behavior, and teacher behavior result in a "plan" for instructional purposes.

The lesson design includes readiness, instruction, and assessment.

1) Readiness

   a) The anticipatory set focuses the student's attention for new learning.
   b) Objective--the student knows what is to be learned and why it's important.

2) Instruction

   a) Input--teacher's activity to aid in learning.
   b) Modeling--teacher using visual-spatial methods.

3) Assessment

   a) Checking for understanding--teacher using techniques to quickly assess the level of learning.
   b) Guided practice--teacher closely monitors a student's independent practice of what has been taught.

c) Independent practice--student practices once the basics are grounded (practicing the right way, not the wrong way).

There are several aspects of lesson design, but one is particularly worthy of mention, time on task. Time on task is the planned effort of the teacher to involve the learner in quality time on an educational objective. If a visit to an interpretive center involves learning some key ecological concepts, try to calculate how much of that time will be spent on that task. Deduct bathroom breaks, gift-shop breaks, orientation, walking time, inner-group interruptions, and so on.

One method teachers are using to increase time on task is the sponge activity. A sponge activity is used to occupy a learner's time on the task of learning the objective, but in a nontraditional setting. As students enter a classroom, they read a sponge activity which will occupy their time and learn while the teacher performs necessary routine tasks. An interpretive facility can provide sponge activities for the students to do while waiting to use the rest rooms or while waiting to peer through the telescope.

Applications

Think back to the school program you would like to improve. Examine any one of the concepts discussed, and apply it to your interpretive approach for that program. Each of the concepts in the Hunter Model can have direct application to interpreters because it puts basic educational theory into practice, and as interpreters you are educators. Learning and applying the Hunter Model as well as understanding other educational trends can be important factors in not only improving school-related interpretive programs, but in also improving your credibility with the schools.

Whether or not a school has formally adopted the Hunter Model is not the basis for establishing credibility because many of the concepts are in practice in some form. Schools with master teachers are practicing effective methods, no matter by what name. If schools in your service area have adopted the Hunter Model, then a direct, collaborative, and credible relationship can be established, if for no other reason than to understand and communicate in similar terms.

Lesson designs can be developed at your interpretive facility to help meet the goals of lesson designs in the schools. With lesson designs your program can develop creative, consistent, and effective approaches to education.

Training and application of the Hunter Model can serve as a cornerstone for interpretive staff development. Any facility using this model could identify a process to train staff and apply the concepts to interpretive programs. Staff would become familiar and comfortable with the concepts within the organizational unit and with the educators the programs serve.

The result is more effective student learning. The result with the schools is establishing or maintaining a clearer, more stable and credible relationship. This relationship could be strengthened instead of weakened when schools are faced with program cutbacks. The benefit to the interpretive staff is to provide effective, consistent approaches to programs with schools.

Interpreters have unique skills and training which teachers and students admire, but interpreters are also educators. As interpreters we use innovative techniques, and as educators we could apply sound educational practice to become more effective without losing our uniqueness.

Resources

This is an awareness presentation. Unfortunately, for many schools one or two administrators have attended awareness sessions only to return to their teachers and try to force the methods into practice. Without training, teachers have little chance of understanding, synthesizing, and applying the Hunter Model. For interpreters to receive further training, first locate the curriculum director of a school in your area. Call a principal, or talk to teachers you know. Find out what, if any, Hunter Model training or adoption the schools have received.

Remember, the name may be different, but by using Madeline Hunter Theory or Hunter Model, you can establish a common baseline. If training sessions occur within the school or schools you contact, then explore the possibilities for yourself or staff to attend the training. If a regional educational service agency exists in your area, then contact them for available workshops. Many universities offer courses which may be titled "Mastery Teaching." There are several educational consultants providing training if you choose to incorporate all of your staff in the process and your resource base is sufficient to justify an independent workshop.

Bibliography

Hunter, Madeline. 1976. *Improved Instruction.* TIP Publications, El Segundo, CA.

Hunter, Madeline. 1967. *Teach More--Faster.* TIP Publications, El Segundo, CA.

Hunter, Madeline. 1982. *Mastery Teaching.* TIP Publications, El Segundo, CA.

Hunter, Madeline. 1967. *Motivation.* TIP Publications, El Segundo, CA.

Hunter, Madeline. 1967. *Retention.* TIP Publications, El Segundo, CA.

Hunter, Madeline. 1967. *Reinforcement.* TIP Publications, El Segundo, CA.

Hunter, Madeline. 1976. *Teach for Transfer.* TIP Publications, El Segundo, CA.

Hunter, Madeline. 1976. *Aide-ing in Education.* TIP Publications, El Segundo, CA.

Cummings, Carol. 1980. *Teaching Makes A Difference.* Snohomish Publishing Co., Snohomish, WA.

Standing For Nature:
Nineteenth-century Interpretation through Prose and Poetry

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Abstract

Certain 19th-century writers, by their interpretation of nature through prose and poetry, helped the country develop a collective insight which was integral to evolving protection of the environment and intelligent use of natural resources.

Introduction

"The heritage of the past is the seed that brings forth the harvest of the future." These prescient words inscribed on the pedestal outside the National Archives in Washington, D.C. elucidate the many activities of humans which later come to fruition as improvement in the life and condition of mankind. The 19th century was a time when advancing technology and industrialization used the country's natural resources in an often rapacious manner, with the concomitant deforesting, sediment-laden waterways, mineral waste, and extinction of wildlife.

Yet, by the latter part of the century there was to come another harvest, one born of increasing sensitivities to the land and resulting in the world's first national park, the setting aside of millions of acres in forest reserves, laws protecting wildlife, and other acts of insight toward a system that humans are but a part of.

What led to this latter harvest--this beginning of national consciousness, when the very word "conservation" became a part of our lexicon? Certainly there were many contributions to this collective understanding--early ordinances regulating forest cutting and clearing in some colonies and 18th-century naturalists such as John and William Bartram. The latter's publication, *Travels,* published in 1791, gave Americans and Europeans alike a world picture (certainly interpretive) of the plants, birds, fish, and reptiles of a large portion of the southeastern United States. Soon it became a celebrated work on both sides of the Atlantic. Here is an example of a Florida sunrise:

> "Behold how gracious and beneficent smiles the roseate morning and the sun arises and fills the plains with light. His glories appear on the forests, encompassing the meadows, and gild the top of the terebinthine pine and exalted palms, now gently rustling by the pressure of the waking breezes: the music of the seraphic crane resounds in the skies, in separate squadrons they sail, encircling their precincts, slowly descend beating the dense air, and alight on the green dewy verge of the expansive lake; its surface yet soaking with the grey ascending mists, which, condensed aloft in clouds of vapour are born away by the morning breezes and at last gradually vanish on the distant horizon. All nature awakes to life and activity." (Harper, pp. 154-55)

He later comments that hunters in his party returned towards evening with a savanna crane (Florida Sandhill) which made excellent soup. Nevertheless, as long as he could get any other food he preferred their seraphic music in the ethereal skies.

Nineteenth-century Interpretation

Throughout the 1800s a rich succession of poets and essayists in newspapers, literary magazines, and books increasingly asked (through their writing) the public to view the natural environment in terms other than commodities or materials.

Near the beginning of the century William Culen Bryant published "Inscription for the Entrance to a Wood" in *The North American Review* (1817), which is illustrative of leaving a vexatious, often venal world behind and rejoicing in what today we value as solitude in all its myriad forms. A portion of his poem:

> "Breathe fixed tranquility--The rivulet
> Sends forth sounds, and tripping o'er its bed
> Of pebbly sands, or leaping down the rocks,
> Seems, with continuous laughter to rejoice
> In its own being." (Jones, p. 353)

Near the century's midpoint Ralph Waldo Emerson, a most gifted philosopher, essayist and poet, wrote *Woodnotes,* evoking a portrayal of a modern naturalist/interpreter, professional or avocational alike.

> "When the pine tosses its cones
> To the song of its waterfall tones,
> Who speeds to the woodland walks?
> To birds and trees who talks?...
> He goes to the river-side, -
> Not hook nor line hath he;
> He stands in the meadows wide -
> Nor gun nor scythe to see;
> Sure some god his eye enchants;
> What he knows nobody wants...
> Knowledge this man prizes best
> Seems fantastic to the rest:...
> Lover of all things alive,
> Wonderer at all he meets,
> Wonderer chiefly at himself,
> Who can tell him what he is?" (Jones, p. 379).

In his celebrated small book, *Nature,* first published in 1836, Emerson gives many reasons why we should value the natural world, which he refers to as "essences unchanged by man." His comment, below, strikes at the very heart of what we as interpreter/teachers hope those we touch come to realize: you never step in the same river or forest twice; there is no bottom to our learning from nature: the well never runs dry.

> "To the attentive eye, each moment of the year has its own beauty, and in the same field, it beholds, every hour, a picture which was never seen before, and which shall never be seen again." (Jones, p. 400)

Also, in the middle of the century Henry David Thoreau, little read in his time but increasingly so at century's end, wrote in 1851 upon the death of a white pine:

> "It is fifteen minutes yet to its fall. Still branches wave in the wind, as if it were destined to stand for a century, and the wind sighs through its needles as of yore; it is still a forest tree, the most majestic tree that waves over Musketaquid. The silvery sheen of the sunlight is reflected from its needles; it still affords an inaccessible crotch for the squirrel's nest; not a lichen has forsaken its mast-like stem...And now it fans the hillside with its fall, and it lies down to its bed in the valley, from which it is never to rise...It is lumber. He has laid waste the air. When the fish hawk in the spring revisits the banks of the Musketaquid, he will circle in vain to find his accustomed perch, and the hen-hawk will mourn for the pines lofty enough to protect her brood. A plant which it has taken two centuries to perfect, rising by slow stages into the heavens, has this afternoon ceased to exist...Why does not the village bell sound a knell?" (Shepard, pp. 69-70)

As the century was nearing an end, John Muir's writing appeared in newspapers and literary journals such as the *Century Magazine,* where he discussed the importance of protecting the Yosemite Valley as a national park. Much earlier, in 1871, his first published piece, "Yosemite Glaciers: The Ice Streams of the Great Valley" appeared in the *New York Tribune.*

> "Those branch basins are laid among the highest spurs of the Hoffman range, and abound in small, bright lakes, set in the solid granite without the usual terminal moraine dam. The structure of those dividing spurs is exactly similar, all three appearing as if ruins of one mountain, or rather as perfect units hewn from one mountain rock during long ages of glacial activity. As their north sides are precipitous, and as they extend east and west, they were enabled to shelter and keep alive their hiding glaciers long after the death of the main trunk. Their basins are still dazzling bright, and their lakes have as yet accumulated but narrow rings of border meadow, because their feeding streams have had but little time to carry the sand of which they are made." (Engberg, p. 78)

What a thrill to read such interpretive insights today, yet the Tribune readers were far more fortunate for they had an opportunity to follow firsthand this intrepid naturalist/interpreter for the remainder of his long literary career. A career when at its end, he expressed a sentiment all past and present naturalists revere.

> "I only went out for a walk and finally concluded to stay out till sundown, for going out, I found, was really going in." (Engberg, p. 23)

Conclusion

In closing let me return to my thesis. The development of a national forest system; national parks; wildlife refuges; and forest, water, and wildlife legislation of the late 19th and early 20th century is the combined result of many efforts, by many people and events in and out of government, in and out of the political "milieu." Yet, we can't deny a rightful place in that effort to the "writer/interpreter" of the last century who helped to sensitize a nation to appreciate all the values of a natural world and thus serve as a catalyst in the aforementioned protection of the environment and more intelligent use of resources. Yet beyond the culmination of their efforts, we honor these interpreters of nearly two centuries past, for in an era of unprecedented and profligate resource use and abuse, they stood for nature.

Bibliography

Engberg, R. (ed.). 1980. *John Muir: To Yosemite and Beyond.* Madison: The University of Wisconsin Press.

Harper, F. 1958. *The Travels of William Bartram, Naturalist's Edition.* New Haven: Yale University Press.

Jones, H. M. (ed.). 1952. *Major American Writers.* New York: Harcourt, Brace, and Co.

Shepard, O. 1961. *The Heart of Thoreau's Journals.* New York: Dover Publications, Inc.

One Planet from Two Perspectives-- National Aeronautics and Space Administration and the National Park Service are Looking at the Earth Together

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Abstract

As we approach the 21st Century, two government agencies with seemingly disparate mandates are forging a partnership that will heighten our understanding and broaden our knowledge of the Earth's ecosystems. This partnership will also help strengthen our stewardship of Earth's limited resources. Through cooperative research and educational programs the National Park Service (NPS) and the National Aeronautics and Space Administration (NASA) are pursuing and more effectively fulfilling their missions. Each agency offers a different perspective of Earth, yet both are currently committed to studying global issues affecting the future of the planet.

Inspired by this vision, a private, nonprofit organization, Wider Focus, and employees of Yosemite National Park, Golden Gate National Recreation Area, and NASA's Ames Research Center have developed new ways to share research, staff, and ideas. As a result we have set three specific objectives:

1) To organize a National Workshop.
2) To identify and implement specific joint research projects.
3) To improve interpretive, educational, and informational programs.

However, the overall goals are much broader. The idea is to set an example of national interagency and private sector cooperation in both environmental research and public education--a national application of the interpretation of resource management issues. Then, by example, and in the true nature of interpretation, "provoke" other environmental, scientific, research, and educational agencies to cooperate in integrated Earth Sciences research programs and public education to address global issues worldwide.

Introduction

The idea of "Spaceship Earth" is not new to interpreters. In the 1970s, it was a primary theme in many environmental education studies. And it was Adlai Stevenson who said:

> "We travel together, passengers on a little spaceship, dependent on its vulnerable resources of air and soil; all committed for our safety to its security and peace; preserved from annihilation only by the work, the care, and I will say, the love we give our fragile craft."

Yet it was the first views of the Earth from space that really brought these ideas home. Astronaut Joseph Allen in his book *Entering Space* described it best:

> "...From an orbital altitude of about 200 miles, the breadth of the earth that is visible at any moment stretches almost 1,000 miles in a smooth curve from one horizon to another...there is nothing new to see from orbit. Yet the perspective is so new, so inspiring, so humbling, that viewing the earth...is inevitably one of the most remarkable and fulfilling experiences of every astronauts' sojourn in space."

As we approach the 21st Century, two government agencies with seemingly disparate mandates are forging a partnership that will heighten our understanding and broaden our knowledge of the Earth's ecosystems. It will also strengthen our stewardship of Earth's limited resources. Through cooperative research and educational programs the National Park Service (NPS) and the National Aeronautics and Space Administration (NASA) are pursuing and more effectively fulfilling their missions. Each agency offers a different perspective of Earth, yet both are currently committed to studying global issues affecting the future of the planet.

Program Goals

Inspired by this vision, a private, nonprofit organization, Wider Focus, and employees of Yosemite National Park, Golden Gate National Recreation Area, and NASA's Ames Research Center have developed new ways to share research, staff, and ideas. As a result we have set three specific objectives:

1) To organize a National Workshop. NASA and NPS scientists, interpreters, educators, and managers would meet to formulate goals and programs which would then be formalized through a National Interagency Cooperative Agreement.

2) To identify and implement specific joint research projects. These cooperative projects would satisfy NASA's research goals and the Park Service's data needs for natural and cultural resource management.

3) To improve interpretive, educational, and informational programs. The NPS is presently under Congressional mandate to preserve the history and future of the "Man In Space" theme at key sites that shaped the early space program, while both agencies are dedicated to fostering public understanding of global issues, the research programs used to study them, the technology required, and the results.

However, the overall goals are much broader. The idea is to set an example of national interagency and private sector cooperation in both environmental research and public education--a national application of the interpretation of resource management issues. Then, by example, and in the true nature of interpretation, provoke other environmental, scientific, research, and educational agencies to cooperate in integrated earth sciences research programs and public education to address global issues worldwide.

NPS was charged in 1916 to preserve and manage the natural and cultural resources under its care, so as to "leave them unimpaired for the enjoyment of future generations." Today, this mandate requires vast quantities of information be collected, analyzed, and monitored on virtually every park unit to prevent or restore impacts on these areas.

NASA has a similar mandate, and recently has committed to a long-range global study of planet Earth. Echoing the NPS mandate, NASA's Earth System Science Committee noted that:

> "Research holds the key to knowledge of our global future. Now, with new scientific insight and technology, we can gain deeper understanding of the Earth as a system and of the consequences of global change for humanity. By deciding to take...steps now, we can help to ensure that the gifts of the Earth will be preserved and passed on to future generations."

Both agencies agree we can no longer look at environmental problems individually--they must be seen as part of the greater whole. For NASA, directing its technological capabilities toward national parks in its Earth Systems studies will provide ground truth for its space-based sensing programs, the Earth-based verification of that remotely gathered data. That same data can provide necessary information to the NPS for the current emphasis on Natural Resources preservation and restoration.

The Possibilities Are Endless

Although at this time we are still awaiting a formal endorsement from the NPS and NASA, many research and public education projects are already underway. This joint research and monitoring will address the major resource-impact issues recently identified by NPS Region Scientists. For example, NASA's capabilities will strengthen resource-base inventories in both natural and cultural areas including habitat definition, archaeological monitoring, and identification and prediction of sites..The research will also augment, reinforce, and bring more cohesiveness to several existing programs including the on-going studies of the wolf (Yellowstone), mountain sheep (Yosemite), and bobcat and coyote (Golden Gate). It will also enhance resource protection by enabling us to detect and mitigate degradation more readily by monitoring fire and smoke behavior and impacts of land-use interactions.

For interpreters, the exciting application will be interpreting these and other research projects to the general public. For example, the NPS's publication *The Interpretive Challenge* proposes "a service-wide initiative to conduct resource education/ interpretation programs with NASA," beginning in 1990 with the service-wide theme

"One Planet from Two Perspectives" to be used when developing programs, school curriculum, and media. Also proposed in the document is "a national workshop of NASA scientists and NPS interpreters, scientists, and resource managers to explore opportunities for joint research and interpretive projects and for sharing technology" tentatively scheduled for Spring 1990. It's planned that the cooperative research and public education will be carried on through the 1990s and into the 21st Century.

NASA Administrator James Fletcher has proposed that 1992 be designated the International Space Year (ISY), calling for an international effort in earth research:

> "...global problems require global solutions carried out internationally. It is imperative that we join together to correlate and integrate measurements from space with ground-truth measurements all over the globe. And this can involve every nation on the face of the Earth--large and small--be it a space power or not.
>
> Our goal is to obtain a scientific understanding of the entire Earth system on a global scale...To face this new and vital responsibility to our global future, the nations of the world must grasp the opportunity the ISY offers to ensure that the gifts of Planet Earth are passed on to future generations."

Nineteen ninety two is also the year of the NPS sponsored 4th World Conference on National Parks. The cooperation of NASA and the NPS could serve as a role model for similar cooperative programs worldwide.

Conclusion

It's our hope that the cooperation between NPS and NASA will serve as an example and inspiration to others in the field of research and public education both nationally and internationally. Interpreters should take a leadership role in this effort, encouraging their agencies to cooperatively participate in research and public education of global issues. In the words of one Earth scientist:

> "...the outstanding spin-off from space research is not new technology. The real bonus has been that for the first time in human history we have had a chance to look at the Earth from space, and the information gained from seeing from the outside our azure-green planet in all its global beauty has given rise to a whole new set of questions and answers."

With the "wider focus" this bond between NASA and NPS can enhance the goals of both agencies. They create new prospects for scientific discovery and resource protection that are wonderfully exciting. As a result of informational and educational programs, we the "crewmembers" of Spaceship Earth can view our planet more clearly from two perspectives. Our challenge as interpreters is to communicate these perspectives to the general public, because as William O'Douglas stated:

> "Once man understands his dependency on the living resources of the earth and is filled with wonder, he becomes dedicated to the task of conserving them."

Meeting the Challenges of Developing a Land Ethic with Urban Audiences

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Abstract

City life creates illusions--our food comes from markets, water from the faucet, electricity from the wall, and the air we breathe is "just there." We congregate in cities, but we "live" off the land. The challenge of reaching urban audiences with the message that we congregate in cities, but we "live" off the land still exists and probably will remain a challenge well into the 1990s and beyond. To meet these challenges, the National Audubon Society has developed a model program in the form of a four-volume, 600-page curriculum designed to be used by educators in urban or rural environments to bridge the gap between the world of nature and the city. This curriculum is called *Living Lightly in the City*, K-6, and *Living Lightly on the Planet*, 7-12.

Land Ethic and Its Relevance to Urban Audiences

"...And men created the city, a world...of abundance from which mankind can provide for himself all that is needed."[1]

Three-fourths of Americans live in cities. For many of us, this is the only life we know. This is where we work and play. This is our home. Because we are generally isolated from direct interaction with land, our city life sometimes creates illusions about our dependence on natural resources. Water comes out of a faucet, electricity out of a wall, and food from a store. The natural world seems irrelevant and not part of our daily lives. The question isn't if we should but how should we as educators restore the reverence for the land in a population that is physically and emotionally isolated from a land ethic?

One Solution for Meeting the Challenge

Over a decade ago, Schlitz Audubon Center began an outreach program directed at urban children. From that program, a curriculum was developed called *Living Lightly in the City* by Maura O'Connor and Kathy McGlauflin. Through the schools, *Living Lightly in the City* educates, informs, and develops an awareness of the natural world.

The curriculum stresses repeatedly the choices and alternatives to everyday living that we have and that are directly related to nature--a decision-making process that promotes awareness of our impact on the earth. How many of us for example, walk or ride a bus or a bike instead of using our automobile? We all have the freedom to speak out and to act, to implement ecologically sound decisions.

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[1] Paraphrased from *Wild America*, a film produced by the National Audubon Society, New York.

Maura and Kathy developed a program for the urban setting working with teachers, using available resources and materials. Living Lightly is specifically designed to be implemented with existing curricula. This was a necessity, especially in light of the "back-to-basics" movement. The program must be flexible and have the ability to be integrated into the teaching of basic skills. Now complete, the curriculum offers four guides: K-3, 4-6, 7-9, and 10-12. The guides are written for all children, but they are targeted at the urban child.

When developing this program, we needed a familiar reference point--a school yard or a playground. These settings provide a marvelous opportunity to teach and learn. Living Lightly makes the connection between natural history and the child's own surroundings and lifestyle.

Appreciating One's Neighborhood as a Starting Point

In the K-3 curriculum, children are invited to explore their own environment--there's an emphasis on discovery, enjoyment, and wonder. Activities are designed to acquaint children with the living things in their community, to get them to gain some understanding of how they fit into the overall environment. In some instances the children use language arts to express themselves and to learn.

One simple activity, called the "Magnificent Walk," allows children to examine in detail parts of their own surroundings. Another activity is entitled "Patterns in Nature." By comparing and contrasting details of natural and man-made design, children are helped to discover the beauty of their own environment, thus awakening their senses. They look carefully at trees in one unit called "Trees Help Me" and are encouraged to care for them. In Milwaukee, vandalism causes severe problems. One out of every two trees planted in this city must be replaced because of vandalism.

In one K-3 activity, each child finds something around the school beginning with almost every letter of the alphabet. They draw pictures on these letters and display them on a web showing interdependence. They can also map their own neighborhood. It helps them in discovering environmental concepts, diversity, interdependence, and change. It also helps them develop a sense of community.

Some children choose a collage to express their view of city life. As children map their neighborhood, they begin to look at it in a different light, starting to decode the various elements of their surrounding. The environment can be overwhelming, but by explaining small pieces of it, it can be put into an understandable framework. One unit called "C is for Caring" directs the children to look for signs of care and neglect in their own community. In the Living Lightly curriculum, students are allowed to create "Litter Monsters." It opens the way for discussion of the "throw-away" mentality and the consequences of it.

Examples of How the Natural World Can Be Made Relevant to Urban Students

In talking to K-12 children, it became obvious that most of them had no perception of their own connection with the community and the natural world. When fourth, fifth, and sixth graders were asked if a city could be built without any resources from nature, 75 percent of them answered "Yes." Many of the activities in the 5-6 curriculum guidebook are aimed at helping children bridge this gap. For example, a rock-cycle transparency is used to teach children about the natural forces affecting the formation of metamorphic, igneous, and sedimentary rocks. The students go on to examine their immediate surroundings to find examples of rocks in the urban setting. They can see, for example, the sidewalk they walk on every day comes from sedimentary rock. This helps the students make the connection between resources, nature, and the constructed environment that we have built.

A water-cycle transparency is used in a water unit to help children understand part of the natural system. Simply turning on a faucet can demonstrate how we interrupt the natural cycle of things to provide for our own needs.

The unit "Going Places" teaches students about transportation and fossil fuels. To point out the influence of the automobile, children write an essay entitled, "The Day the Cars Disappeared." In a unit called "Enough for Everyone," students use draft detectors to find energy leaks in their school. The unit relates energy concerns to the students' everyday lives--this is important since 75 percent of the students questioned in pretesting said they were not willing to wear more clothing in winter and not willing to turn down the thermostat. For the 4-6 graders, one activity called "The Air We Breathe" illustrates the complexity of problems created by air pollution. Student art projects demonstrate a polluted city scene.

Issues and Possible Solutions Are Stressed at Upper Grade Levels

For grades 7-9 and 10-12, *Living Lightly on the Planet* focuses on finding solutions to environmental problems. Students begin to understand environmental issues, their complexities, consequences, and impact. Part of the grade 7-9 guidebook finds students investigating the carrying capacity of systems, urban as well as natural. This and other sections lead to the premise that our bulging population is straining the earth's resources. Land-use planning activities include role playing and investigating patterns of land use in the students' own community. The unit on water introduces students to ground water, aquifers, and a steady infiltration of hazardous waste into the water supply system.

One Living Lightly experiment demonstrates how leaching landfills and carelessly discarding hazardous waste contaminates our valuable ground water. Another unit examines our lifestyle and consumerism and their effect on the environment. For example, students use plastic to make a sculpture of disposable items. They can also analyze advertisements, finding ways to determine the environmental impact of various consumer goods. This raises questions about whether the consumer is being manipulated or not and whether the short-term convenience of certain goods is worth the long-term consequences.

The unit "This Land Was Made for You and Me" explains that while we claim to own land, we're really only borrowing it against the future. It's essential for our children to learn to intelligently care for this priceless resource. Living Lightly exposes children to the positive aspects of their environment, to its delicate balance, and to its need for care and protection. It develops an appreciation and respect of nature. It shows children the relationship between their own neighborhood and the natural world. It also creates an awareness within the students which enables them to see themselves as part of the overall system, part of the interrelated web of life. Living Lightly gives children the knowledge and skills necessary to make wise, informed decisions in an attempt to "live more lightly" on this planet, to be aware of the consequences of our own actions, and to enjoy a clean, healthy environment.

We dream of educating our young people to be sensitive and aware; to be active caretakers of the land, water, air, and the wilderness; and to care for each other as they preserve the priceless resources of their own future.

Bibliography

Brown, Lester R. 1981. *Building a Sustainable Society.* W. W. Norton and Company.

Brown, Lester R. 1984. "Must Prosperity Be a Bitter Dream?," *People.* Volume 11, No. 1, International Planned Parenthood Federation, London, England.

Coates, Joseph F. 1982. "New Technologies and Their Urban Impact", G. Gapert and R. Knight (editors). *Cities in the 21st Century.* Volume 23, Urban Affairs Annual Reviews, Sage Publications.

Ginn and Company. Lexington, MA, *Sounds and Images*, recording of nerve jangling sounds for noise pollution activity.

Hennings, George and Dorothy. *Keep Earth Clean, Blue and Green. Environmental Activities for Young People.* Citation Press, New York.

Moore, Lillian. Junk Day on Juniper Street, *Parents Magazine Press.*

National Audubon Society, New York, producers of film *Wild America.*

National Wildlife Federation, Washington, D.C., Ranger Rick's Nature Magazine, *A Better Place to Live*, July, 1982, pp. 15-17.

O'Connor, Maura and Kathy McGlauflin. *Living Lightly in the City.* Vol. I and II, Schlitz Audubon Center, Milwaukee, WI.

Population Reference Bureau, Inc. 1984. *World Population.* Washington, D.C.

Scholastic Magazines, Inc., *Sounds of My City* and *Sounds of Animals* recordings, Englewood Cliffs, NJ.

Schumacher, E. F. 1973. *Small Is Beautiful.* Harper and Row, New York.

Silverstein, Shel. *The Giving Tree.* Harper and Row, New York.

Toffler, Alvin. 1980. *The Third Wave.* Bantam Books.

United States Forest Service. 1978. *Investigating Your Environment.* Washington, D.C.

Westman, W. E. and R. M. Gifford. "Environmental Impact: Controlling the Overall Level," *Science.* Vol. 181, pp. 819-825, 1973.

Worldwatch Institute Report. 1983. *Materials Recycling: The Virtue of Necessity.* Washington, D.C.

Fire and Water:
Two Case Studies on the Interpretation of Resource Management

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Abstract

Marine resources suffer from the out-of-sight, out-of-mind syndrome and a public misconception of unlimited abundance. At the same time, park visitors may not understand or approve of a policy which allows forest fires to burn the wild lands where they recreate. Two case studies explore systematic interpretive approaches to providing a link between park visitors and the resource management policies designed to preserve the resources they have come to enjoy. One of the most difficult interpretive challenges facing the National Park Service today is how to develop a conservation ethic for resources beyond the public's reach. How do we share the values of unimpaired ecosystems with people who can't directly experience them? Access to submerged marine ecosystems in particular is denied to all but a select few. At Channel Islands National Park an Underwater Video Interpretive Program brings visitors one step closer to a firsthand experience in a new environment, the kelp forest. In Grand Teton National Park, fifteen years of experience in interpreting natural fires has resulted in a comprehensive interpretive approach. Both programs result in visitors who are better informed about the ecological reasons for natural resource management actions.

Introduction

Interpretation of Natural Resources has been viewed as a technique for enhancing recreational visitors' experiences. Interpretation can also educate visitors about resource management policies. Increased understanding of natural systems has the potential to generate visitor support of National Park Service resource management programs designed to preserve what visitors have come to enjoy.

Underwater Video at the Channel Islands National Park

Marine resources, perhaps more than most others, suffer from the out-of-sight, out-of-mind syndrome and a misperception of limitless abundance. It's difficult to get folks excited about preserving what they can't see, touch, and hear. One of the most difficult interpretive and philosophical challenges facing the Service today is how to develop a conservation ethic for resources beyond the public's reach. How do we share the values of unimpaired ecosystems with people who can't experience them firsthand? Direct access to submerged ecosystems in particular is denied to all but a select few. The Underwater Video Interpretive Program brings Channel Islands visitors one step closer to firsthand experience in a new environment, the kelp forest.

Throughout the National Park System, rangers lead visitors on guided walks to explore pine forests, mountain meadows, desert washes, and historic homes. Channel Islands National Park interpreters have added an innovative twist to the time-honored tradition of the guided hike. At Anacapa Island's landing cove, diving rangers in wet suits and SCUBA gear regularly lead a guided "Walk Through the Kelp Forest." Visitors venture below the surface of the sea without ever getting their feet wet. Combining high-tech video and diving equipment with personal interpretive services enables park staff to meet the unique challenge of bringing the remote, submerged resources of this island park to visitors live and in person.

The purpose of the Underwater Video Interpretive Program at Anacapa Island in Channel Islands National Park is to acquaint the nondiving visitor with the diversity and beauty of the marine environment. Our goal is to perpetuate the ethic that there are marine areas worthy of complete protection. Marine resources are an integral part of the park story.

Visitors view the often unseen world of kelp forest and rocky reef through the use of an underwater video camera, a two-way audio communication system, and surface video monitors. During the program, visitors see what the diver sees. They can ask the divers questions, receive immediate replies from 40 feet below the surface, and relate what they hear to what they see on the dockside video monitors. The marine resource is no longer hidden below the surface, no longer out of sight and out of mind.

The Underwater Video Program is an ideal example of integrated park interpretation, research and resource management programs. The equipment used in the program was originally developed by park marine biologists to record data for their kelp forest monitoring project. Long-term monitoring programs were established at Channel Islands to supply baseline data on the dynamics of natural ecosystems. Park managers use information gathered about resource conditions to make decisions affecting ecosystem health, to develop long-range strategies which protect park resources, and to evaluate potential threats to park resources.

Kelp forest ecosystems were one of the first resources targeted by park research scientists who designed and implemented the monitoring program. After five years of research, the design study is complete, and the resource management staff has assumed responsibility for long-term monitoring.

The role of park interpretation in this program is twofold: to impart often complex information about the marine resource and to convey a sense of the choices that the American public must make that affect the integrity of the plant and animal communities of the coastal Pacific. Over 1,000 species--seals, sea lions, algae, fishes, and marine invertebrates--live in the first 60 feet of the water column in a kelp forest. Their survival depends on public decisions about offshore oil drilling; coastal development; commercial kelp, fish, and shellfish harvest; and recreational SCUBA and charter boat fishing, just to name a few. Interpreters at Channel Islands can't save the world or even the coastal Pacific in the 30 minutes we spend with park visitors at an underwater interpretive program. And the diver operating the underwater video camera shouldn't attempt to find and identify all 1,000 species which live in the kelp forest. But we do use that time together with our visitors to reveal the tremendous diversity, productivity, and unusual appeal of the kelp forest plants and animals most of us seldom get a chance to encounter.

If one of the goals of the integration of resource management and interpretation is to motivate people to address critical issues like preserving habitats, maintaining intact functioning ecosystems, and relating the impact of individual daily decisions on endangered plants and animals; we must first give them the tools to understand those processes and a reason to care. The underwater video program provides the opportunity to directly experience and learn about a new place--one that is otherwise beyond reach for most of our clientele. Interpreters adapt one of four themes in the Underwater Video Program:

1) Compare and Contrast a Kelp Forest Community with a Terrestrial Forest: This theme helps visitors understand the unfamiliar by making comparisons with the familiar. How are the organisms and processes of a kelp forest "different from" and "the same as" a terrestrial forest community?

2) Adaptation to Life Underwater: This theme includes the technology of SCUBA and surface air supplied diving, as well as the life history of the various marine organisms.

3) The Value of Marine Resources: This theme addresses economic uses, recreational opportunities, aesthetic values, and the important lessons derived from monitoring the ecological health of a kelp forest community.

4) Diversity of Life in a Kelp Forest: This theme first defines diversity as both variety and abundance of life forms. It then explores some of the reasons for the diversity of an intact yet dynamic kelp forest community like nutrient cycling and upwelling and water temperature. It also covers the fact that Anacapa Landing Cove is an ecological reserve, one of only four marine areas in California completely protected from harvest and collecting.

The benefits of using underwater video and surface-to-diver two-way communication as interpretive media in this setting have been tested and proven at Channel Islands over the last three years. Protection, Maintenance, Research, Resource Management, and Interpretation work together to schedule the certified divers and the program coordinator needed for each program throughout the busy summer and fall seasons. The small Interpretive and Resource Management staffs couldn't deliver this program on its regularly scheduled basis without the support of all facets of park operations.

The best way to describe the results of this cooperation is to define a new symbiotic relationship between interpretation and resource management--a mutually beneficial one. The degree of public interest in the innovative techniques of underwater video interpretation have resulted in opportunities to showcase the park's marine monitoring program for park visitors. Interpretation can aid resource managers in their public information efforts. The public must have the information to make choices based on an understanding of the reasons behind and consequences of alternative resource management techniques.

Interpreting Fire in Grand Teton National Park

In the last fifteen years, Grand Teton National Park has hosted three major wildfires:

1974--Waterfalls Canyon Fire
  Ignited by lightning
  Burned 3500 acres
  Extinguished by early snows five months later

1981--Mystic Isle Fire
  Ignited by lighting
  Burned 2000 acres
  Extinguished by reaching lake shore on one side and a minimal fire line on the other side one week later

1985--Beaver Creek Fire
  Ignited by lightning
  Burned 1000 acres
  Extinguished by extensive firefighting efforts two days later

The use of natural fire as a tool of resource management in national parks gained favor in the early '70s. The fire management policy in Grand Teton National Park divides the Park into three fire zones. Each of the fires listed above occurred in a different zone. The Waterfalls Canyon Fire was allowed to burn until naturally extinguished--the let-burn zone. The Mystic Isle Fire burned naturally with a minimal fire line on one side of the fire to prevent it from heading toward Jenny Lake Lodge--the decision zone. The Beaver Creek Fire was fought by firefighters from around the nation and several buildings were lost--the suppression zone.

From the viewpoint of resource managers, researchers, and scientists, all of these fires have greatly enhanced the natural resources and the species diversity of Grand Teton National Park. In areas of extreme fuel loading due to years of fire suppression, resource managers continue to use prescribed burning as a means of resource rejuvenation. And what about the park visitors--those 2-1/2-million people who come each year to view and enjoy Grand Teton National Park? The 1974 Waterfalls Canyon Fire caused a lot of smoke and a lot of controversy because it was one of the first let-burn fires in a large western national park. When the Beaver Creek Fire began on August 31, 1985, park interpreters stepped forward to connect the resource managers and the park visitors.

During the Fire

1) The Roadside Interpreter--Station interpreters at roadside turnouts near areas of heavy smoke and/or fire activity. Set up portable signs 100 yards before the turnouts reading "Ranger on duty to talk about the fire."

2) Evening programs and other ranger-led activities--Have a fire slide show ready to go. Add the fire emphasis to other activities. Take advantage of the resources management momentum the fire gives you.

3) Smoke Meetings--Be Proactive. Schedule a meeting for the press, local residents, and visitors with the fire and resource managers. Display a caring attitude to diffuse controversy early and to increase support for the fire.

4) Spot Announcements--Use the public address system in the visitor center to give hourly announcements on the fire situation. Display fire maps and give short, impromptu talks about the fire.

5) Site Bulletins and Brochures--Have handouts available at all visitor contact points so the visitor can take them home and study them at leisure.

After the Fire

1) Publish an article about the fire in the park newspaper.

2) Continue to have site bulletins/brochures available for visitors to take home with them.

3) Offer fire walks where visitors can see the renewing of the resource and explore the burn area.

4) Continue slide shows and videos about the fire, stressing the resource management opportunities in the burn area.

5) If possible, publish a self-guiding trail leaflet to guide people on their own in the burn area.

6) Establish an active environmental education program with local schools to take classes through the burn area and teach the students about resource management.

7) If the fire is being researched, publish the findings.

The Future Fire

1) Continue newspaper articles about the fire and the fire management in your area.

2) Keep a slide show together. Use it in high-fire-danger times of the year.

3) Continue activities in the burn area--lower the fire emphasis and combine it with other information.

4) Ready the visitors for fire, especially in high-fire-danger times of the year. Make them aware that programs may be cancelled while ranger personnel are fighting a fire.

Conclusion

Freeman Tilden told us:

> "Through interpretation, understanding
> through understanding, appreciation
> through appreciation, protection."

Interpretation has the potential to educate visitors about natural resources and about resource management policies. In turn, increased understanding of natural resources may generate visitor support of resource management policies and protection of park resources. If interpretation can work proactively to connect resource management and park visitors, it will have achieved one of the highest callings of the profession.

Bibliography

Nielsen, C. and T. Buchanan. 1986. A Comparison of the Effectiveness of Two Interpretive Programs Regarding Fire Ecology and Fire Management. *Journal of Interpretation*, 2(1):1-11.

Nielsen, C. and T. Buchanan. 1986. Interpreting Controversial Management Policies. *Journal of Forestry*, 84(2):60.

Nielsen, C., 1988. A Guided Walk in the Kelp Forest. *Interpretation*, 1(2), USDI. NPS.

Sharpe, G. W. and G. Gensler. 1978. Interpretation as a Management Tool. *Journal of Interpretation*, Vol. 3.

Wagar, J. A. 1978. Why Interpretation? *Journal of Interpretation*, Vol. 3.

Interpreting Frogs: Birds Aren't the Only Things that Sing in the Spring

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Abstract

Morning bird walks are popular programs, especially in the spring migration season, but not all visitors are early risers. Often overlooked each spring are animals whose intriguing lives are covered by a blanket of darkness--the nocturnal frogs. Many people never venture out into the natural world at night. Frogs are an exciting addition to the intrinsically attractive night walk.

During the breeding season, male frogs serenade females with their own brand of opera. Each species has a unique song or call. Since any given region will have a much smaller number of frog species than bird species, it's much easier to become proficient at identifying frogs.

Introduction

"I have always liked frogs. I liked them before I ever took up zoology as a profession; and nothing I have had to learn about them since has marred the attachment. I like the looks of frogs, and their outlook, and especially the way they get together in wet places on warm nights and sing about sex."

Archie Carr
The Windward Road

Frog Walks

Bird walks are standard on the menus of interpretive programs offered by parks and nature centers, especially during the spring migration period. Visitors are amazed as an expert naturalist names each species by its song, but are perhaps disappointed to learn that birds sing primarily to defend territory,not to declare their joy about spring's arrival. Your visitors may enjoy the fact that other springtime songs are much more "romantic" in purpose. Male frogs and toads fill the spring air with seductive serenades to coax the she frogs into a mood for mating. Thus, these overlooked amphibians offer interpretive personnel another way to introduce their audiences to the nocturnal sounds of the natural world.

I have led frog walks both at Morningside Nature Center in Gainesville, Florida and at the Ford Nature Education Center in Mill Creek Park, Youngstown, Ohio. Though the southeastern states offer the best variety of species, frogs are found all over the United States, including Alaska and Hawaii. Thus almost any interpretive naturalist could insert this program into their repertoire. Approximately 70 frog species are considered eastern and about 35 are western.

The prospective leader should plan ahead. It's wise to become familiar with the local varieties and the general dates of their active singing or calling periods a year in advance. A suitable location for the program must ensure the presence of frogs and the safety of visitors. Publicity in the newspaper such as "Nature Group Lost in Quicksand on Wild Frog Chase" is hardly desirable. Because there aren't nearly as many frog species to deal with compared to birds, the interested interpreter could learn (and teach) all the local frogs fairly quickly.

I start my programs indoors with an introduction to the natural history of frogs through a slide program which depicts each frog species we hope to listen to and observe. Accompanying the slides and my narration are the frogs' songs played on a portable tape recorder. Included are mnemonic devices to help the visitor learn the songs. For instance, the chorus frogs, *Pseudacris sp.*, sound like a finger running over a comb, and green frogs, *Rana clamitans*, sound like a pluck of a banjo string.

After the slide presentation and question/answer session, the leader and group should don boots, flashlights and/or headlamps, and then walk or drive to a preselected location. It's a good idea to visit the site an evening or two before the formal walk to discover what's singing. Be forewarned that the vicissitudes of weather can impact the frogs and your program. Frogs sing best during or after rainy weather when the humidity is high. We had a cold, somewhat dry spring in Ohio this past year and on the night of my frog walk I made jokes about polar bears and reindeers due to the lack of frogs' choruses. Most visitors are understanding and evening walks are intrinsically fun anyway.

Before the walk, mention what frogs are likely to be encountered and remind participants that excess noise and stray flashlights may spook frogs into silence. If the singers quiet down at your approach you may have to wait awhile until they forget about the disturbances. Frogs, unlike elephants, aren't noted for their memories! Singling out individual singers takes practice and patience, but nothing delights a visitor more than to watch the vocal pouch of a male frog moving with song while bathed in the spotlight of the leader's flashlight. Gently capturing a frog for closer observation does no harm, but I have found it best if only the leader and an assistant actually enter the body of water. Strive to handle the frog with wet hands. Placing the frog in a bottle or clear plastic bag is helpful in showing the frog to a group.

Conclusion

Peering into the nocturnal, romantic world of these tailless, jumping amphibians may be just that intriguing program lacking on your schedule. Professor Archie Carr tells us that he, "collects frog songs in his head as some people save stamps in a book." I hope you will give your visitors the opportunity to focus on these overlooked, and underlistened to, creatures of our wetlands. Perhaps you can convert a couple of dedicated birders or stamp collectors, too!

Bibliography

Behler, John L. and F. Wayne King. 1979. *The Audubon Society Field Guide to North American Reptiles and Amphibians Alfred A. Knopf.* New York.

Conant, Roger. 1975. *A Field Guide to Reptiles and Amphibians of Eastern North America.* Houghton Mifflin Company, Boston.

Dickerson, Mary. 1969. *The Frog Book.* Dover Publications, Inc. New York.

Duellman, William and Linda Trueb. 1985. *Biology of Amphibians.* McGraw-Hill Book Company, New York.

Mattison, Chris. 1987. *Frogs of the World.* Facts on File Publications, New York.

Porter, George. 1967. *The World of the Frog and the Toad.* J. B. Lippincott, Philadelphia.

Smith, Hobart M. 1978. *Amphibians of North America.* (Golden Guide) Western Publishing Company, New York.

Stebbins, Robert C. 1966. *A Field Guide to Western Reptiles and Amphibians.* Houghton Mifflin Company, Boston.

Wright, Albert H. and Anna A. 1949. *Handbook of Frogs and Toads of the United States and Canada,* Comstock Publishing Company, New York.

Suggested Recordings

Allen, Arthur and Peter Kellog. *Voices in the Night,* Cornell University Records, Cornell Laboratory of Ornithology, 157 Sapsucker Woods Road, Ithaca, NY 14850 (1982). *Slides are also available

Bogert, Charles. *Sounds of North American Frogs,* Folkway Records and Service Corporation, 701 Seventh Avenue, New York City (1958).

The Frog Pond. Droll Yankees Inc., Providence, RI 02906 (1969).

International Recordings

Cockcroft, R.B. *The Frogs of Boraceia.* Brazil, Department of Vertebrate Zoology, National Museum of Natural History, Smithsonian Institution, Wash., D.C. 20560, 1988.

Carruthers, V.C. *Voices of South African Frogs.* Witwatersrand University Press, Johannesburg, 1979.

Developing a Visitor Interactive Computer Information System at Olympic National Park

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Abstract

The interpretive staff at Olympic National Park developed a visitor interactive computer information system in-house. This allowed flexibility to more closely meet the needs of park visitors in the future (by continuous program evolution). Information on trails, roads, and overnight facilities is stored in databases. This information is presented in text and graphics format. Custom keypads and the program to produce graphics and link them to the master program were contracted to outside agencies.

Why Provide a Visitor Interactive Computer System?

The interpretive staff wanted to produce a thorough information system which would be available to visitors 24 hours a day. We decided that a visitor interactive computer information system would best meet this need. Further, such a system could provide more information instantaneously than could an employee and could also provide printed information. The tool could be used by visitors and employees to expedite dispersal of information.

Software Selection

Some prepackaged software allows for production of visitor interactive information systems, such as McGraw-Hill Authoring System. However we found these to be too inflexible. Various programming languages could also be used. We chose Turbo-Basic, but also considered Pascal, C, and dBase III+. Turbo-Basic was chosen because it's simple and fast. It's a compiled program, which enabled it to run much faster than Basic(a). The skill required to program in even a simple language isn't acquired overnight. If the staff doesn't have a computer programmer, it's probably best to contract the entire package.

The portion of the program contracted out was written in "C." This module allowed the drawing, storing, and retrieving of four- or 16-color graphics. The module was tailor made to allow "C" screens to appear on cue during the running of a Turbo-Basic program, and then to return control of the program to Turbo Basic.

Our contractor didn't complete the project assigned, as we did not specify clearly enough the desired end product. Fortunately, the product was far enough along so that we could stumble through it and get the graphics screens we wanted. I'm aware of two other national parks which have experienced similar problems obtaining a final quality product with contractors. Part of the problem is the evolving nature of these systems.

It's very difficult to predict the desired final product at the beginning. New ideas arise, little glitches appear, and adjustments must be made. All of this should be figured into the contract. Also include in your contract provisions for additional adjustments to be made after delivery of the "final" program. Insist on complete documentation and a hard copy and diskette copies of all programming source code. In this way, other contractors or employees can manipulate the program(s) as needed later. Make sure you own the copyright of the program. Don't pay until the product is received and proven satisfactory during a designated test period.

Hardware Selection

If we had been planning to use prepared educational programs primarily for children, then we would have selected Apple hardware. The National Park Service ADP standards require MS/DOS or PC/DOS as the standard operating system(s) for microcomputers, using a version no earlier than 3.1. IBM or clone computers are standard.

We chose an IBM model with a 5.25" soft disk drive and a 20 MB hard drive, to allow ample room for the massive amount of information we would store in various databases. We found a floppy-diskette based system to be far too limited. Our prototype system used 10 MB of storage or about 30 floppy diskettes of information.

Were we to do this over, we would have selected a 40 or 60 MB hard drive. We also would have selected a model with a faster running speed (at least 10 megahertz) and a 32-bit processor. When great amounts of information or complex graphics are involved, running speed becomes more important. Visitors don't want to wait for information to appear. Ideally, we should have purchased a complete backup system; it could have been used for replacement parts and for program modification while the original program is up and running.

We purchased a four-color monitor and graphics card, then later upgraded to an enhanced graphics monitor and card to allow for better graphics. In the development of the next interactive system (at Indiana Dunes National Lakeshore), we plan on using touch-screen technology. Keypads will not be necessary.

We contracted the production of custom keypads at Olympic National Park. These allow visitors to select options from screen menus, but don't allow unauthorized personnel to break into the programs and modify them. Control and break keys are missing from the custom keypads.

A summagraphics input tablet was purchased for graphics input. We first tried to input graphics with a mouse, but found the graphics tablet and cross-hair puck superior; it allowed us to trace trail maps and other art work.

Our final product resides in a tamper-resistant locking wood cabinet. The electrical supply cord is wired into the wall and can only be disconnected from within the cabinet. There are two custom keypads, one outside for after-hours use, and one inside for daytime use when the visitor center is open. The monitor is protected behind a Plexiglas sheet. It rests on a swivel base and is rotated for night/day use, to point outside or inside. The cabinet also sports several ventilation screens and fans to keep the system cool. A slot is available to dispense written information from a printer though this program module is not yet written. Inside the cabinet is a standard keyboard for program manipulation. Plastic routed signs on the cabinet invite visitors to use the system.

The Nature of the Program

Our system consists of an introductory program, main program, subprograms, maintenance and modification programs, print programs, databases, and graphics. We found that a number of smaller program modules allowed us to more easily track down problems and modify programs as needed. As programming time becomes available, we hope to include animation and sounds to further attract visitors to use the system.

The introductory program has a "welcome and press any key for information" message. This message appears in monochrome text mode and moves around the screen every 10 minutes to prevent screen burn-in. All other text screens are in graphics mode. This makes the screens more attractive and allows us to highlight different blocks of text. Once activated, a series of graphic screens appear to advertise the nature of the program and other important messages (seals, emblems, safety messages). The program feeds into the main program.

The main program is very short and simple. It's a menu which feeds into campground, motel, road, or trail subprograms. After selection from the main menu, the program feeds into the selected subprogram.

Each subprogram consists of a number of menus which further narrow the field until the desired information appears on the screen. Almost all of this information is drawn from random access files (databases) which are opened from within the subprograms. Periodically, the subprograms call up graphic screens. These screens are 16-color maps of trails or roads in the park.

Visitors who use interactive computer systems may not be familiar with computer use. Keyboards interact with computers such that a key press held down sends multiple impulses of that key to the keyboard buffer. Up to 15 key presses can be stored in the keyboard buffer. Our program was written to absorb any leftover key presses prior to the next menu.

People of various attention spans and interests use our computer system. They leave the unit when they obtain the desired information or become distracted. The program was written to return to "the beginning" after a designated period of no key presses, using a timer. This protects the screen from an image burn-in and presents the next visitor with a fresh introductory screen.

Other programs were written which are not available to visitors in this system. They allow programmers to add to, delete from, or modify the databases. Additional programs allow us to print out information from the databases for inclusion in notebooks which visitors can browse through. Batch files which expedite program running or modification are an important part of our final product.

We keep two sets of complete program backups on diskette for insurance, should the hard disk fail us or a programming error occur. Also, all programs are printed out and kept in a hard copy binder. This is additional insurance. The hard copy file also allows us to more easily modify the system.

Conclusion

When developing a visitor interactive computer information system, consider a simple system with basic information initially. Add to it and modify it later. This will provide a product sooner to the public; it will also allow for flexibility. The system shouldn't be totally committed at the beginning; it will undoubtedly evolve into something other than any of us could have originally envisioned.

There is by nature much trial and error in this development process. Stumbling blocks may be avoided by contacting others who have developed such systems. Ours was developed with an outside contact. The program took two years to create, from inception to "completion." As we plan another such system at Indiana Dunes National Lakeshore, we anticipate a production time of two to three months. Having been through it as a programmer, I will not have to deal with the same stumbling blocks as in the pioneering effort at Olympic National Park. Hopefully, you won't have to either.

Bibliography

Beck, Larry, Andrea Philips and Daniel Dustin. 1988. "Computers in Wilderness." *Courier.* Vol. 33, No. 7, July.

Borland. 1988. *Turbo Basic.* Borland International, Scotts Valley, CA.

Cuellar, Gabriel. 1984. *Advanced Programming in Microsoft Basic.* Reston Publishing Company, Reston, VA. 157 pp.

Garrison, Paul. 1985. *Turbo Pascal for Basic Programmers.* Que Corporation, Indianapolis, IN. 410 pp.

Johnson, Nelson. *Graphics in C--Programming and Techniques.* Osborne McGraw-Hill, Berkeley, CA. 670 pp.

Kleiman, Tom. 1983. "Computers and Videodisc Applications in Interpretation." Report for Division of Audiovisual Arts, Harpers Ferry Center, Harpers Ferry, WV. 75 pp.

Petsche, Jerome E. 1985. "Visitor Interactive Computer System--Denali National Park Preserve, Four-Cache BIOS Version." National Park Service.

Trombetta, Michael and Angela. *Using Basic on the IBM PC.* Addison-Wesley Publishing Company, Menlo Park, CA. 472 pp.

Wolverton, Van. 1984. *Running MS DOS.* Microsoft Press. 350 pp.

Writing Panels in "People English"

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Abstract

Research in zoos, aquariums, and parks suggests methods to make educational graphic panels a more effective form of interpretation. The author summarizes findings from research in visitor studies that apply in particular to increasing visitor reading behavior. Researchers advise using visitor-experience-based criteria to write brief, directive copy for family groups that address phenomena in their line of vision, among other findings.

Introduction

The educational panel, either illustrated or nonillustrated, can be a very challenging medium of communication: "haiku science." The challenge isn't only to present in a few words and pictures the most important information, but to get our visitors to actually read those few words. There are very few professionals doing research on visitors' reading behaviors. These researchers have determined findings that can help us increase panel readability. A number of studies have shown that most people don't read these panels.

For the vast majority of the visitors to the San Diego Zoo, interpretation is nonpersonal. Tour guides serve groups by reservation, but there are no docents or on-grounds interpreters for the casual visitor who's not a member of a group. So our panels carry a very heavy educational load. Our goal has been to find ways to make visitors read the panels we write.

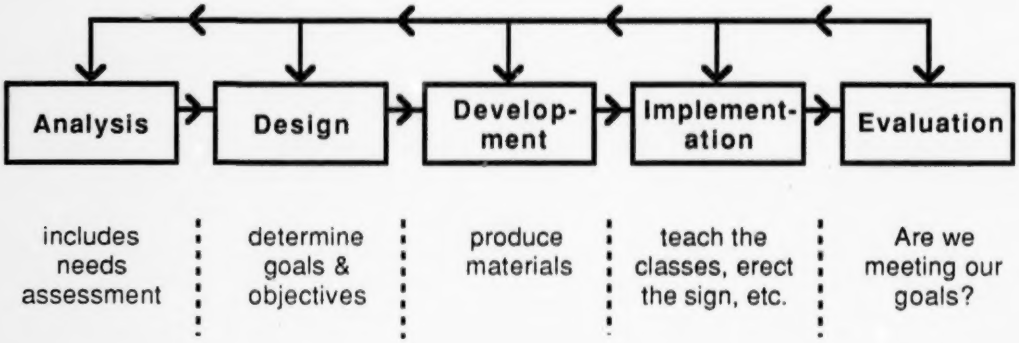
The title of my paper comes from Linda Taylor and Brandy Pound of the San Francisco Zoo. In our business we translate "scientese" into everyday, conversational language--"people English," Taylor and Pound call it. They came up with a great title for a panel on plate tectonics and continental drift: "Breaking Up is Hard to Do."

There's more to creating educational panels than the writing: illustration, materials, maintenance, and engineering of interactive components, etc. But for the purposes of this paper, we're concentrating on the copywriting. You're the copywriter--what are you going to write and how are you going to write it? Let's get our visitors to read. But why should they?

Why? Who? What? How?

The model in Figure 1 is called the "ADDIE" (Analysis-Design-Development-Implementation-Evaluation) system, a model introduced to me by Dr. Allison Rossett of San Diego State University's Educational Technology Department. It's a system because it has components in which one component's output forms the input for the next component, and all components are linked by feedback. The systems approach is a very basic tool for planning educational programs or products or for planning anything---a budget, for instance.

Figure 1. The ADDIE System: Five Stages of Instructional Design


Analysis
Design
Development
Implementation
Evaluation
includes needs assessment
determine goals & objectives
produce materials
teach the classes, erect the sign, etc.
Are we meeting our goals?

Purpose: Why?

1) "A successful exhibit should have a significant educational impact on the visitor" (Bitgood,1986).

Steven Bitgood's research involves tracking visitors and observing their behavior, including reading behavior. This statement isn't a finding from research, but a value judgment, a choice. You begin by being clear in your own mind that education is an important function of an exhibit. It's a decision. More often it's an assumption, but it should be a conscious, stated decision and your institution should be committed to it.

2) In the absence of human interpreters, exhibit labels are the major device for accomplishing this educational objective (Bitgood, 1986).

This is particularly true in the San Diego Zoo and in many other institutions:

Of the twenty-five-million visitors who come to the Smithsonian Institution's museums each year, fewer than one million take a tour, hear a lecture, attend a seminar or a series of classes, listen to a concert, or see a demonstration. In other words, less than four percent of our museum visitors have an experience in which a museum staff member, paid or volunteer, provides some kind of educational service of program. The other ninety-six percent visit some portion of the institution's exhibits (Madden, 1985).

While we in the museum/zoo/park field have compiled statistics and demographic descriptions of our visitors, these numbers tell us nothing about whether they are learning anything. This is one reason why we at the San Diego Zoo include formal, structured evaluation in our exhibit planning and building process, with particular attention to the interpretive elements (components built into the exhibit for the express purpose of transmitting information, ideas, or attitudes). We want to find out if visitors learn anything.

Madden poses the question, "How can museum educators improve the chances that their museums are rich learning environments for the walk-in visitor? The answer lies not in programs, publications, and special events for ninety percent of the visitors, but in the exhibits...That is, literally, where the action is for the visitors" (Madden, 1985).

3) Readers acquire more knowledge than nonreaders (Peart, 1984).

Obvious? We assume a lot of things, and sometimes we can be surprised by our assumptions. Robert Peart has conducted visitor research at the British Columbia Provincial museum in Victoria, British Columbia, which verifies our assumption. It's important to have research to back it up, because in our institution, the copy on the signs that we write may not seem that important to others we work with. Odd as it may seem, it helps to have an objective basis for our opinion that people actually learn more by reading.

4) Readers spend more time viewing exhibit objects over and above the time spent reading the labels (Peart,1984).

Research has proven that visitors get more out of the exhibit when they read--good reasons for writing panels in the first place.

Once we've established a sound overall purpose for an educational effort, in this case, the writing of copy for panels, we can proceed. I like to use the following model for planning and developing educational or instructional materials, programs, or projects.

Audience: Who?

In the analysis stage we look at our audience, as well as our content--who is our reader, our learner? In the San Diego Zoo's Education Department we've become market driven in the sense that we've organized our staff around particular audience/learner groups including adults, school groups, and families. It's a customer-oriented approach. It's not just a question of what we do well, but what our customers want and need.

1) Start with the reader/learner/customer. Who are they?

The authorities we turn to for guidance in writing these panels are not only content authorities, the zoologists and the biologists, but experts in visitor behavior studies, communication theories, and cognitive psychology. One awareness that is emerging from the literature is very exciting. I used to ask myself, "Is my learner an adult or a child?" It's neither.

2) Consider the social context in which zoo or park or museum-going is occurring. Our learner is a group: a family group at our institution for social and recreational purposes (Bitgood, 1986).

So our learner isn't an adult, it's not a child, it's a multigenerational group. What are the group dynamics going on in these groups?

3) Determine the amount of organizational versus exhibit-related conversations.

Karen Hensel of the Maritime Center at Norwalk did a study at the New York Aquarium with Columbia University and published it in the 1987 Annual Proceedings of the American Association of Zoological Parks and Aquariums in an article called "Discourse at Displays." She videotaped family groups as they visited exhibits and analyzed the group dynamics and conversations that were going on. Citing the lack of models for studying multigenerational audiences and how learning occurs in the family, she found that there were two kinds of conversations going on--organizational and exhibit related. Organizational conversations were comments like "Let's go, move over here, Johnny get off that pillar." Then there were exhibit-related conversations: "Look at that funny fish." As interpreters we should try to reduce the percentage of the organizational kind of conversations and evoke more conversation relating to the exhibit. This gives us a new goal on how we approach our writing task.

4) Give visitors visual access to one another and the exhibit.

One of the things Hensel discovered was that searching for and reading labels interrupts the turn-taking nature of conversations. Somehow we want to get in on that conversation. We want our institution's voice to be one of the family group, so we can participate in what's going on with them as a group.

5) "Look. "

"A typical conversation begins by a summons by one member of the group to the others to attend to an exhibit specific. The word "look" is frequently used as a device to organize and focus the group" (Hensel,1987). In some of our identification panels, we direct our readers to look, e.g. "Look at the feet on this animal." One of our curators said, "This sounds like 'Look, Dick, see Jane run.'" We've had to explain what we were trying to do, how we were trying to be a part of this group that has children and adults that want information to address what's in front of them. The panel's voice isn't necessarily a curator's voice. It's a friend who knows the zoo, has an "in" there, and wants you to see what you might not see.

Objectives: What?

In the design phase we specify our goals and objectives: what do we want the visitor's experience to be? That's a different kind of a goal and objective from what do we want to say, what do we want them to learn. What do we want their experience to be? Beverly Serrell did a breakthrough study on reading behavior in the Shedd Aquarium in Chicago. She's now a consultant, a real pathfinder in this area. She states that successful graphics are now defined by the amount of visitor use, not by the awards they've won. Here are some goals she suggests we aim for:

1) Help facilitate groups of visitors primarily interested in a social outing (Serrell,1988).

2) "Because the kids wanted to come." Serrell cites studies finding that people go to parks and museums because the kids wanted to go (Brennan, 1977 and Rosenfeld, 1988).

Findings three through six are goals that Beverly Serrell believes can enhance the visitor experience. We may not know how exactly to accomplish these ends, but if we can articulate them and be more aware of them, we're sure to find ways.

3) A sense of control
4) A feeling of personal significance
5) An experience of discovery
6) A feeling of being enriched by the experience

Behavioral goals and objectives look for what the learner will be able to, or the learner will choose to do. The copywriter's focus is what the learner will choose to do. It isn't that the learner is not able to read, for we know from our exit surveys that the typical Zoo visitor is above average in income and education. What we want them to do is choose to read the panel, under the conditions of the social context.

What criteria could we use if we're going to follow an experience-driven model of designing graphics? Serrell (1988) states that you're going to look at different kinds of objectives than you have before. Does the sign or exhibit:

a) Focus attention?
b) Provide feedback?
c) Facilitate the aesthetic experience?

Stephen Bitgood's criteria (Bitgood, Finlay and Woehr, 1987) are quite observable and measurable:

a) Does it get them? Does it stop them? ("Attracting power")
b) Does it keep them? How long do they stay involved with the panel? (Holding power)
c) Does it teach them? You can give selected visitors a quiz in the course of evaluation. We've done that in two exhibits, the Kopje and Tiger River.
d) Does it motivate them to try to find out more?
e) And is the content right, is it accurate?
f) Is the writing right? Is it correct grammar? Has it been proofread?

Development: How?

This is the development stage, how we actually go about the task. The first finding listed here is probably the most important, though most difficult.

1) Limit the number of words to 50 to 80 per panel!

Our small, nonillustrated identification panels in the Zoo meet this goal easily because they're just a short paragraph followed by one-line categories like habitat, range, diet. But when it comes to our big, expensive, illustrated, multithousand-dollar panels, the tendency is to want to tell everything about this animal, or at least the three most important things. But you can't tell the three most important things in fifty words. In our new Sun Bear Forest exhibit, we wanted to take three short paragraphs with the three subheads, and put each one on a separate panel. This runs the expense of backlighting panels up too high, so what we did was create a triptych--one panel with three stepped segments, clearly separated.

Stephen Bitgood studied people's reading behavior in a natural history museum (Bitgood, Pierce, Conroy and Patterson, 1986). He took one big panel with three paragraphs with subheads, for a total of 150 words. He measured the percentage of visitors who stopped to read the labels, the duration of label-reading, the total time in the exhibit hall, time spent viewing the objects, and the performance on a quiz. He found that when he took those same three paragraphs, those same 150 words, and divided the block up into three separate panels of about 50 words each, over twice as many people read them. Eleven and 8/10th percent read the big one, but 28 percent read the three small ones--almost 2-1/2 times as many. People won't read 150 words, but they will read 50 words three times. It's been asked if these findings would hold in an outdoor park environment as well as indoor museum environment. Much depends on crowding, and other environmental factors; if the visitors have been out on the trail for a long time, have seen little or no other written materials, and they're readers, then they may stop to read 150 words. But even under those conditions, three shorter panels will elicit even more reading behavior.

2) Include visual contact in your signs. Refer to the things that the visitor can actually see. That's what they want to know about and what they are most likely to ask questions about.

3) Use directive statements like "Look for..." that encourage participation and observation. For instance, a statement that says "Look for animals hidden in the exhibit" tested better than "If you allow your eyes to adjust in the dark you will see more in the exhibit." Be directive: tell them what you want them to do.

4) Write at a readability level of 6th or 7th grade to reach the widest audience. Beverly Serrell cites S.M.Taylor's finding that if a reader cannot understand, or can't pronounce a word, he or she may skip over it, but more frequently the reader stops (Taylor, 1986). They read as far as that strange word, and off they go.

We can use computer software that tests reading levels (e.g. Fullwrite Professional word-processing program for Macintosh or Readability by Scandinavian PC Systems, Inc. for IBM-compatible PC) or use various formulas (Flesch, Dolch, etc.). Watch your average sentence length. The readability level can often be improved simply by cutting a long sentence and making it two.

Flesch distinguishes between grade level of reading and readability. Readability means more than just what grade level your reader has attained in reading skill, but how easy it is to read--how inviting is it? Does it refer to people, to human interest? Personal references, names, personal pronouns, and words that deal with human beings warm up your copy. You can say "we," referring to the Zoo or its staff. Then get rid of affixes, as in the word "misconception," there's a prefix "mis," and a suffix ,"tion"-- these all slow down reading. Instead, you could say "wrong idea."

5) Answer commonly asked questions (Serrell).

6) Promote discussion and sharing of information.

7) Offer games and humor.

8) Give people feedback.

Judy Rand of the Monterey Bay Aquarium has done a wonderful job with panel text. Her advice is not necessarily based on objective visitor studies, but on timeless principles of good writing, so I'm including some of her guidelines here:

9) Organize your information. Each paragraph should have a beginning, middle, and end. Some organizational schemes:

    a) Chronological
    b) Cause and effect
    c) Problem, analysis, solution
    d) Order of importance
    e) From part to whole or whole to part

Research on perception has shown that information has to be organized before it can be perceived (Fleming and Levie, 1978).

10) Tell a story.

11) Correct misconceptions.

We practice professional eavesdropping at the San Diego Zoo, following visitors around to find out what they think. One favorite I.D. sign addresses comments visitors have been heard making about bats: they're blind, they suck blood, and so forth. So we turned it around, and wrote "Yuck, a bat! " (a direct quote from visitors), directly addressing known misconceptions, stating that they're not blind, they don't suck blood, and how important they are to the fertilization of the rain forest.

12) Use subheads--sentences that summarize.

Subheads should be complete sentences that summarize, not just subtitles. So "Hungry youngsters may fight to the death" is more compelling than "Fatal Sibling Rivalry." Notice that newspaper headlines, designed to grab readers and sell them papers, however truncated, are sentences or at least clauses complete with subject and predicate. They're not labels, "Smith found guilty."

One more gimmick to get the reader's attention comes from Gabe Cherem of Interp Central in Minnesota:

13) Use "puncture points."

"Puncture points" are language or imagery that connect to the visitor's personal experience in a vivid, catchy way. We use as a title for a panel about rock hyraxes "Rock Group: Little Brothers of the Elephants," and for a Verreaux's eagle panel about their stick nests: "Family life of an eagle: sticking together for the sake of the kids."

Formative Evaluation: What Works?

Formative evaluation, called Beta testing in the software world, just means a dry run of a prototype to see what works and what doesn't. It's part of the development process. When it comes to graphic panels, you can test your text on focus groups. Get together a group that represents your typical reader. Although you can't find out whether or not they choose to read in the exhibit setting, you can present the text, ask them questions, and encourage discussion. It helps to print the text in a large typeface and put it up on a wall. It's amazing how the different text looks from typewritten copy in your hand. The Macintosh can print in 36 point, the size we often use for most of the copy. We've used the following questions from a newsletter for the Academy for Educational Development as points of discussion:

1) Main idea
    a) What was the main idea this message was trying to get across to you?
    b) What does this message ask you to do?
    c) Was there anything in the message that was confusing?
    d) Which of these phrases best describes the message: easy to understand, difficult to understand

2) Likes and dislikes--What parts do you like best? Dislike?

3) Believability--Is it believable? Why, or why not?

4) Personal relevance and interest
    a) What kind of person was this message talking to?
    b) Someone like you? Someone else, not you?
    c) All people? All people, but especially (the selected audience)?
    d) Was it interesting? Informative?
    e) Did you learn anything new about ________________? What?
    f) Was it too short? Too long?
    g) Discouraging? Encouraging?

Implementation

Implementation involves fabricating and installing the actual sign. Materials, colors, illustration, maintenance--these are topics more extensively covered elsewhere. There are a couple of aspects of this stage that directly impact on reading behavior, however. Bitgood (1986) found that two important factors increased reading behavior: letter size (36 and 48 ideal) and proximity.

1) Make it legible.

Thirty-six-point typeface is comfortable for typical zoo and park visitors. In close quarters, 30 point might be easier to read, but not much smaller. The best colors to use are black type on a white background. White or colored letters on black background have been shown to retard reading (Rehe).

2) Keep the label close to the exhibit. It should be within sight of the object or animal addressed.

Summative Evaluation: Was It Worth It?

Summative evaluation has to do with estimating the value of the finished product in terms of the stated objectives. It can be used as data for planning of future or panels or modifying the present one. Some methods for performing a summative evaluation of panel/label copy are:

1) Observe visitors.
2) Test their knowledge.
3) Ask them to rate the panels.
4) Ask them to choose words to describe their visit--do they give words that reveal a focusing of attention, seeing relationships, feeling competent (Serrell)?
5) Measure the reading level, number of words, and size of letters--these all correlate strongly with stopping and holding power (Bitgood).

Conclusion

Writers and designers of interpretive materials interested in basing their work on research can keep in touch with Steven Bitgood's newsletter *Visitor Behavior: A Publication for Exhibition-Type Facilities* (The Psychology Institute of Jacksonville State University, Jacksonville, AL 36265). Also strongly recommended is Fleming and Levie's book *Instructional Message Design* (1978) which describes findings from behavioral science, outlining principles of perception, memory, concept learning, and attitude change.

Bibliography

Bitgood, S., and Benefield, A. 1988. Visitor Reactions to Similar Exhibits Across Zoos. Psychology Institute, Jacksonville State University.

Bitgood, S., Finlay, T., and Woehr, D. 1987. Design and Evaluation of Exhibit Labels. A paper presented as part of a symposium entitled "The Psychology of Exhibit Designs in Zoos" at Southeastern Psychological Association. Technical Report #87-40c of the Psychology Institute at Jacksonville State University.

Bitgood, S., Nichols, G., Pierce, M., and Patterson, D. 1986. Effects of Instructional Signs on Museum Visitors. Technical Report # 86-70 of the Psychology Institute, Jacksonville State University.

Bitgood, S., Nichols, G. Pierce, M., Conroy, P., and Patterson D. 1986. Effects of Label Characteristics on Visitor Behavior in Museums. Technical Report # 86-55 of the Psychology Institute, Jacksonville State University.

Bitgood, Stephen, editor. 1988. *Visitor Behavior: A Publication for Exhibition-Type Facilities*, 3, no. 2. Jacksonville, AL: Psychology Institute, Jacksonville State University.

Bitgood, Stephen, Patterson, Donald, and Benefield, Arlene. 1986. Understanding Your Visitors: Ten Factors That Influence Visitor Behavior. *Annual Proceedings of the American Association of Zoological Parks and Aquariums.*

Bitgood, Stephen, Roper, James, Jr, and Benefield, Arlene, editors. 1988. *Visitor Studies-1988: Theory, Research, and Practice* (Proceedings of the First Annual Visitor Studies Conference). Jacksonville, AL: The Center for Social Design.

Bitgood, Stephen. 1987. Knowing When Exhibit Labels Work: A Standardized Guide for Evaluating and Improving Labels. *Annual Proceedings of the American Association of Zoological Parks and Aquariums.*

Bitgood, Stephen, Benefield, Arlene, Patterson, Donald, Lewis, David, and Landers, Angela. 1985. Zoo Visitors: Can We Make Them Behave? *Annual Proceedings of the American Association of Zoological Parks and Aquariums.*

Brennan, T.J. 1977. "Analysis of Topeka Zoo Visitor Survey and Its Implications to Management." Master's thesis, Texas A & M University.

Bryan, Betty. 1986. The Why and What of Programing for Senior Citizens. *Annual Proceedings of the American Association of Zoological Parks and Aquariums.*

Derwin, Claudia and Piper, Joan. 1988. The African Rock Kopje Exhibit: Evaluation and Interpretive Elements. *Environment and Behavior*, 20, no. 4: 435-451.

Fleming, Malcolm and Levie, W. Howard, Indiana University. 1978. *Instructional Message Design: Principles from the Behavioral Sciences.* Englewood Cliffs, New Jersey.

Flesch, Rudolph. 1946. The Art of Plain Talk. New York.

Glennon, Lorraine. 1988. Designer Boulders and Monkey Chow: Museums' High Cost of Doing Business. *Museum News*, March/April 1988: 42-43.

Hensel, Karen. 1987. Discourse at Displays. *Annual Proceedings of the American Association of Zoological Parks and Aquariums.*

Hood, Marilyn. 1986. Getting the Answers: How to Do Audience Research Right. *Annual Proceedings of the American Association of Zoological Parks and Aquariums.*

Jenkins, David. 1985. A Survey of Interactive Technologies. *Annual Proceedings of the American Association of Zoological Parks and Aquariums.*

Jennings, Hannah. 1987. How Successful Exhibits Happen--A Workshop. *Annual Proceedings of the American Association of Zoological Parks and Aquariums.*

Joslin, P. Grunauer, S., Napolitano, G., Nichols, M., Sarris, A, Steadman, A, and Urbanick, R. 1986. A Demographic Profile of the Zoo Visitor. *Annual Proceedings of the American Association of Zoological Parks and Aquariums.*

Kool, Richard. 1987. Doing the Thing Right: Values, Technique, and the Open Ocean Exhibit. *Annual Proceedings of the American Association of Zoological Parks and Aquariums.*

Lattis, Richard. 1986. Buddy Can You Spare A Sign? *Annual Proceedings of the American Association of Zoological Parks and Aquariums*: 246.

Lee, Alfred. 1976. A Report on Educational Graphics and Reading Behavior. Unpublished report for the Zoological Society of San Diego.

Litwak, Howard, Kaestle, David, and Wetzel, Joseph. 1987. Which Way Is the Polar Bear?: Planning Site-Signage Problems. *Annual Proceedings of the American Association of Zoological Parks and Aquariums.*

Madden, Joan C. 1985. To Realize Our Museums' Full Potential. Museum Education Roundtable. *The Journal of Museum Education: Roundtable Reports*, Vol. 10, no. 4, p.3-5.

Peart, Robert. 1984. The Impact of Exhibit Type on Knowledge Gain, Attitudes, and Behavior. *The Curator.*

Piper, Joan. 1987. Mission Possible: Video Al Fresco. *Journal of International Zoo Educators.*

Rand, Judy. 1985. Fish Stories That Hook Readers: Interpretive Graphics at the Monterey Bay Aquarium. *Annual Proceedings of the American Association of Zoological Parks and Aquariums.*

Rehe, Rolf. *Typography: How to Make It Most Legible*. Carmel, Indiana: Design Research International.

Robinson, Michael. 1987. Towards the Biopark: The Zoo That Is Not. *Annual Proceedings of the American Association of Zoological Parks and Aquariums.*: 678.

Rosenfeld, S.B. 1980. "Informal Learning in Zoos: Naturalistic Studies of Family Groups." Doctoral dissertation, University of California, Berkeley.

Sanders, Elisabeth. 1987. Designing for People: Some Principles from Cognitive Psychology. *Annual Proceedings of the American Association of Zoological Parks and Aquariums*: 751.

Screven, C. G. 1979. Visitor Attention and Learning in Public Exhibits and the Role of Evaluation. *Annual Proceedings of the American Association of Zoological Parks and Aquariums:* 151.

Serrell, Beverly. 1983. *Making Exhibit Labels: A Step-by-Step Guide.* Nashville: American Association for State and Local History Press.

Serrell, Beverly. 1988. The Evolution of Educational Graphics in Zoos. *Environment and Behavior* , 20, no. 4: 396-416.

Sheng, Sherry. 1987. An Opportunistic Approach to Conservation. *Annual Proceedings of the American Association of Zoological Parks and Aquariums.*: 17.

Swenson, Susan. 1984. A Comparison of Visitors at Different Types of Zoo Facilities. *Annual Proceedings of the American Association of Zoological Parks and Aquariums*

Wakeman, Barry. 1986. An Evaluation of Zoo Educational Technique (Including the Use of Live Animals). *Annual Proceedings of the American Association of Zoological Parks and Aquariums.*

The Tsongas Industrial History Center: A Model of Collaboration between a National Park, University, and School System

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Abstract

The Tsongas Industrial History Center is a collaborative project of the University of Lowell, the National Park Service, the Lowell Public School system, and schools throughout the State of Massachusetts. The Center's goal is to encourage the teaching of industrial history within a broad cultural context, using the environs of the city of Lowell and the National and State Parks as vast primary historical and social resources. At the Center, students and teachers have the freedom to learn and "do" history in new interactive ways. Presently, the center is located in a fraction of the space it will occupy in the Boott Mill Complex when restoration is completed in 1990. The Center's programs will extend statewide and will eventually impact the teaching of industrial history on a national level.

Introduction

According to Dr. Edward Pershey, Director of the Tsongas Center, industrial history approaches the study of American culture in a new way. Factory systems, new machines, and mass marketing changed the nature of American culture and society. Industrial history puts those changes into broad perspectives to give students a way of relating those changes to their own material culture. Artifact study, oral history, and local history all play important roles in "doing" history rather than simply reading about it.

Where It All Began

Lowell National Historical Park was established in 1978 to preserve and interpret Lowell's pioneering role in the industrial revolution. The park includes over five miles of canals, mill complexes, operating gatehouses, and mill worker housing. One of the park's primary objectives is making the complex story of the industrial revolution understandable to students and visitors of all ages. Visitors travel by electric trolley and canal barge through the city to visit neighborhoods and boardinghouses where workers lived and tour cotton mills to see and hear an operating turbine and belt-driven power loom. Interpreters weave the story of Lowell on a variety of tours combining different exhibits, mill complexes, historic structures, and modes of travel.

The original seed for the Tsongas Industrial History Center grew from several innovative on-site and outreach programs initiated by park staff to address the needs of school groups. One can imagine the lack of enthusiasm from students touring this old milltown in the sleet and bitter winds of January. The visitor experience at Lowell had largely been outdoor. Trying to explain how a placid-looking canal once powered thousands of machines housed in five-story mill buildings, or why the belltower and huge clock looming over the millyard symbolizes a fundamental change in American society is not an easy task. It soon became clear that we needed a permanent facility to adequately address these and other concepts in greater depth.

In addition to on-site programming there was a desire to reach school children in their own classrooms. The Lowell Industrial Learning Experience (LILE) began in 1979 and was successful on many levels. The initial development involved teachers which led to the production of a program which supplemented the school curriculum. The program helps fourth-grade teachers introduce the industrial period in their own classrooms and is followed by a trip to the park.

In the classroom, the LILE: "Farm to Factory" program illustrates the change from an agrarian to an industrial society. Students role play the experiences of a young woman who leaves her New England farm to work in the Lowell mills. Students dress in 19th century reproduction clothing and pick, card, and spin wool and weave cloth on small looms. They are involved in activities throughout the 90-minute program. Experiential teaching methods inspired by innovative programs at Old Sturbridge Village contribute to the overall success of our educational offerings.

Once at Lowell, students tour the industrial city by trolley and canal boat and visit historic gatehouses, mills, an operating turbine, and power loom. En route they also encounter several historical characters "drawn back" from the 1850s as portrayed by State Park Rangers in period costume. The two-part experience has become an important part of the social studies curriculum in the Lowell schools. With a very heavy commitment from the National Park and an agreement with the Superintendent of Lowell Public Schools, the LILE program is one of the early models of interagency collaboration and has a direct impact on every fourth-grade student in the city. The LILE program has retained its original simplicity even after nine years and several revisions.

I'm Sorry, We're Completely Booked for this Year

Because of the early success and popularity of our educational services we began to receive more requests for programs than we could conceivably handle. Boat and trolley transportation systems were doubled to serve visitors and students. Tour offerings and LILE programs were increased by as much as 100 percent. School systems in Massachusetts, Rhode Island, New Hampshire, and even Maine became interested in reserving on-site and off-site programs. Clearly, the word was out that Lowell National and State Parks provided exciting, curriculum-based educational programs. We created such a demand for services that in the 1985-86 school year alone we were forced to turn away eight-thousand students. This was a test for the Superintendent and the management staff of Lowell National Historical Park. What was the limit of our commitment to education? How would we supply services to the vast audience we've discovered?

The year 1985 was a turning point in the future of Lowell's educational programming. Superintendent Sandy Walter arrived with a tremendous commitment for increased programming. She encouraged the new Education Specialist and Chief of Interpretation to expand existing offerings and reach well beyond the modest resource room proposed the previous year. She combined her personal commitment for education with the collaborative philosophy of Lowell and introduced the idea of a major education center in the Boott Mills. The 100,000-square-foot cotton mill named for Lowell's first mill agent, Kirk Boott, was about to become the park's primary interpretive museum and the Tsongas Industrial History Center. In a time of federal budget problems an additional operating increase to fund an education center was out of the question. It was time to look for partners.

With a Little Help from Our Friends

Fortunately, the National Park Service is not the only agency in Lowell concerned with improving and providing for visitor education. The initial search for potential partners led us to the Center for Field Services and Studies in the College of Education at the University of Lowell. Not only were they a natural partner because of their academic expertise, they also had a mandate to improve the quality of education in Massachusetts schools through teacher-training programs and field services.

A strong partnership was established between the National Park and the University of Lowell which began with creating collaborative school programming, using school volunteers, and offering teacher workshops. With great support and enthusiasm from local and regional school systems, the planning for the Tsongas Industrial History Center began. Superintendent Walter was able to enlist the support from key state legislators including State Senator Paul Sheehy and State Representative Susan Rourke. These legislators are strong supporters of the park and education in the state and show great enthusiasm for new collaborations. Specifically, they sponsored legislation to fund the Tsongas Industrial History Center with state money to be administered through the University of Lowell.

A National Park Foundation grant and numerous grants from local community organizations provided the funds for the planning phase. The Center for History Now was contracted to coordinate a planning team composed of interpreters, university faculty, professional museum educators, exhibit consultants, architects, and civic and cultural leaders.

The Tsongas Center Today

The Tsongas Center is in its first year of operation. Like other operations in Lowell, the Center wasted no time getting started. With a limited staff of three specialists and a director, they immediately began offering workshops, publishing curriculum materials, designing a newsletter, and filing grant applications to supplement their base funding from the university. They are also designing exhibits and space plans for a 1990 move to their permanent home in the Boott Mill where the facilities will include discovery areas, a theater, demonstration spaces, workrooms, resource-lending collections, conference rooms, and offices. Until that time their moderate offices and resource library will remain in a nearby millspace.

The three principle components of the Center are experiential learning activities, teacher training, and curriculum development. These components evolved from the five interpretive themes of Lowell National Historical Park identified in the enabling legislation: labor, capital, power, machines, and the industrial city. Until the permanent facility is finished, off-site programs, teacher training, and curriculum development compose the first phase of programming.

Conclusion

The most important lessons learned from the Tsongas Center model are twofold. The story of Lowell and its role in the Industrial Revolution is nationally significant, very complex, and attracts interest from the entire educational community. For this very reason it was necessary to involve education professionals in every phase of the development. Secondly we learned to look beyond conventional methods of problem solving. The Tsongas Center is the result of successful collaboration. A National Park, a State University, and a State School System joined forces to create the first education center dedicated to developing and teaching the concepts of industrial history. While many elements of the Center remain to be developed, we feel the Tsongas Center will be one of the most significant contributions made by cooperation in Lowell, Massachusetts.

The Museum Environment: Preserving Interpretive Collections

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Abstract

The museum environment holds the major key to preserving interpretive collections. Whether on exhibit or in storage, all museum artifacts are affected by the climate and physical conditions in which they are placed. To fully care for all collections, we must insure a proper and stable museum environment. Therefore, all caretakers of interpretive collections must know the dangers and limitations of the environment which surrounds the artifacts we are entrusted to interpret and preserve.

In the National Park Services' publication, *Manual For Museums*, its author, Ralph Lewis, refers to environmental factors which effect an artifact's preservation as "Agents of Deterioration." *The Museum Environment: Preserving Interpretive Collections* also identifies these "agents of deterioration." This paper includes information and techniques that will assist your efforts in the defense against these destructive environmental factors.

Introduction

Interpretive collections, whether organic or inorganic, are affected by the environment in which they are displayed or stored. All objects are certainly unique not only in their historic or interpretive importance, but also in the physical elements in which they are composed. Nevertheless, there are nine basic environmental factors which will cause some form of deterioration in all objects. These factors are: temperature; humidity; mold/mildew; ultraviolet, visible, and infrared light; pests such as insects and rodents; airborne particles such as dust; chemical air pollution; fire; and humans.

Knowing what environmental factors endanger collections and the conditions which enhance these factors' existence will be the first step in evaluating their potential hazard. Couple this basic information with some simple techniques and precautions, and you are well on your way to mitigating the destructive effects of these nine "agents of deterioration."

Temperature

Temperatures will directly and indirectly affect the preservation of all interpretive collections. Whether organic or inorganic in nature, excessive temperature will cause a variety of deterioration to the collection. If the temperature is too low, objects will weaken and crack. Moisture will condense externally and internally, later freezing if temperatures continue to drop, further adding to the decomposition of the object. When the temperature is too warm, organic materials become brittle and crack, glues separate, and veneers lift from their original location. In addition, if the temperature exceeds 70 degrees Fahrenheit and there is a sufficient amount of moisture present, mold growth can be expected.

Another cause of collection damage is rapid or frequent temperature fluctuations. As temperatures vary, objects expand and contract, causing the internal structure to weaken with each fluctuation. Such rapid changes will almost always cause damage to any organic object. Even gradual changes in temperature over long periods of time will effect the integrity of your collections.

General museum standards state the environmental temperature should be between 60 and 75 degrees Fahrenheit, with 65 degrees Fahrenheit being the optimum temperature. This temperature may seem a little low for the comfort of employees and visitors and may cause a financial burden on the institutions' budget. But in the long run we must always place the collection's preservation as the most important aspect of the operation.

Most museum institutions control their atmospheric temperature with heating and air cooling/conditioning systems. But don't let the presence of a mechanical system lull you into a sense of security when it comes to maintaining a relatively constant temperature in your facility. Gradual changes in temperature due to mechanical breakdowns or improper thermostat adjustments can lead to damage within the museum environment. Constant monitoring of your temperature and related controlling equipment will increase your chances of identifying any problem associated with your heating and cooling systems.

Humidity

Humidity, or more correctly, relative humidity (RH), is the amount of water vapor that is in the atmosphere at any given time relative to the temperature of the atmosphere at that given time. Water vapor and condensed water vapor can cause a great deal of damage to objects within a museum. Metals will oxidize and rust from excessive moisture, and woods will crack and warp if the relative humidity is too low. Foxing in historic prints will occur when the metal nitrate in the paper actually starts rusting, and bronze disease occurs when bronze objects are exposed to high humidity.

Museum practices place a 55 percent RH as the optimum percentage of moisture content in the air. But the word "relative" must also be considered in relation to the individual object. If an artifact from a desert region, with a RH of 10 to 20 percent, is placed in a 55 percent RH, this object will absorb more moisture than it has been acclimated to. And if you take another object from a coastal region which has been acclimated to a RH of 80 percent and place it into 55 percent RH, the object would dry out and become brittle. So always remember, all objects are unique and have developed their own levels of tolerance and levels of moisture content. Be aware of that unique collimated condition and take it into consideration when changing the location or atmospheric conditions of the object.

Controlling the RH of your environment is essential if you are to provide secure conditions for your collections. Not all institutions are able to maintain a stable atmospheric RH through only using humidifiers and dehumidifiers. Humidifiers and dehumidifiers are usually only effective for exhibits cases or small rooms, and probably will not address the needs of an entire building. This equipment must be constantly maintained if it's to be effective against critical levels of humidity. The alternative to humidifiers/dehumidifiers is to use your facility's heating/cooling system to control the levels of air moisture content. A common rule when dealing with relative humidity is that in a contained space, when there is a rise in temperature, the RH drops. Conversely, in a contained space, when the temperature goes down, the RH rises. Thus, using your facility's heater and air conditioners may give you the means to control the RH in your institution.

Temperature and Humidity Monitoring Equipment

The critical factor in maintaining both the temperature and the relative humidity is to know your facility's environmental atmospheric conditions. To properly know these conditions, accurate monitoring equipment must be used.

A wide variety of environmental monitoring equipment is available to aid your operation. There are thermometers to register the temperature and sling hygrometers and dial hygrometers to indicate relative humidity. The most efficient and accurate instrument available to museum operations is the hygrothermograph. This instrument records both temperature and relative humidity, which is plotted against time on graph paper. The time period is usually weekly or monthly. Once the data is obtained from your monitoring equipment you can use this information to implement changes in thermostats, schedule fans and ventilation systems, and justify any physical alterations to your facility.

Mold

Mold, also referred to as mildew, can be found almost anywhere on the planet. Given the proper conditions, mold spores will bloom and grow, causing both surface scarring and internal damage to collections.

If there are stagnant air conditions with temperatures above 70 degrees Fahrenheit and the RH is higher than 70 percent, mold can be expected. Mold spores are everywhere and grow best in dark, damp locations. As mold grows, it rapidly consumes surface areas and the mycelia of the spores eat into whatever it has taken root in. The key to addressing mold/mildew problems is to limit the conditions mold finds preferable.

As mentioned before, maintaining a stable temperature and RH level throughout your environment is critical. If, when monitoring your conditions, you note that both the temperature and humidity has risen above the acceptable levels, take immediate steps to correct the problem. Use air fans to keep the air circulating, thereby reducing the opportunity for the mold spores to take root. In a small microenvironment such as an exhibit case, use small whisper fans or air vents to maintain a constant air flow and stabilize the interior environment with that on the outside of the case. If mold is discovered growing on an object, isolate the piece from other artifacts and use a soft brush to gently remove the spores. Using a vacuum cleaner, remove the spores. It's also important that the moisture content of the object is lowered so spores don't take root. Drying the object by exposing it to a circulation air flow should reduce its moisture content.

If an object is seriously infected with mold growth and cleaning and drying doesn't solve the problem, contact a museum chemist, conservator, or a collections manager for specific recommendations for the object. Several methods exist for killing mold spores, and these procedures should only be employed by trained collections management personnel. One method is exposing an infected object to ultraviolet radiation to kill the mold, but remember that this radiation is also destructive to many objects. A relatively new method of killing mold spores is freezing the infected object, however excessive cold may damage the object in other ways. Yet another option, which is not always the best solution, is the application of fungicides and other chemicals which kill molds. As always, avoid haste when taking measures to mitigate your mold problems. Don't use methods which may cause further damage. When in doubt, seek professional assistance.

Light

Light can cause chemical changes in the composition of most objects. Not only do objects fade, but their internal structures are weakened from exposure to high levels of light. All light can cause some degree of deterioration, but it's ultraviolet (UV) light which causes the greatest photochemical damage. This damage will always affect organic collections more severely than inorganic collections.

Generally, museum light comes from three sources: incandescent, fluorescent, and filtered daylight. Incandescent light generated from light bulbs is usually strong in the infrared levels of light, and will cause more damage due to heat and temperature problems. Special consideration must be taken in exhibit areas with closely placed incandescent light fixtures to minimize heat buildup inside the case. Light diffusers, small fans, and vents in exhibit cases usually mitigate this problem.

Fluorescent and filtered sunlight contain dangerous high levels of ultraviolet radiation. Be concerned about these light sources when looking at preventing serious photochemical degradation of objects.

The best defense against UV radiation in a museum is to minimize the amounts falling onto your collections. Reducing the duration and intensity of the light are the basic environmental considerations. Exhibit cases that have light-sensitive objects should include switches to turn the case's lighting on and off. Other options include some age-old solutions. Pulling curtains and closing the drapes during heavy sun-level hours is always an effective measure. However, don't damage historic drapery materials when performing this activity. Another, more accepted option for reducing the UV intensity is to use UV filters. UV filters can reduce up to 90 to 100 percent of UV radiation. The UV filters can be obtained in treated Plexiglas, fluorescent tube sleeves, or as films that can be used as window shades or directly affixed to the glass of the window itself. Whatever filtering system used, the yearly monitoring of the filters is important to ensure that the materials are still providing a protective barrier against high levels of UV light.

Pests

Pests, whether insects, rodents, or others will always cause rapid and irreversible damage to your collection. The first line of defense is to take steps to minimize the opportunity for pests to gain access to your objects. Evaluate your facility with regards to pet access. Is there space around the doors? Is the building's foundation exposed? Do you keep the windows opened without using screens? All these points of access must be blocked if pest intrusion into the collection is to be restricted.

The next step against pest infestation is to establish a line of defense inside your institution. Snap traps are very effective for catching and killing mice. Small glue trays can be used to entrap all types of insects. If you decide to use pesticides within your facility, make sure that chemicals aren't applied directly on an object. Insecticides should only be used as a barrier between your collection and the pests point of entry.

Another critical defense measure is to ensure that there are no food products to attract and feed these enemies. If you demonstrate food preparation, clean the area when you are finished. If food products are on display in period kitchens and dining rooms, take steps to ensure that they are not a source of food for pests. The use of live plants inside the museum environment is never a good practice. Not only do the plants attract pests as a habitat and food source, but there is always the added danger of water damage as plants are regularly watered. Silk plants and artificial foods should replace the real counterparts. This may detract from the interpretive ambience, but it's much more acceptable than the loss of your collections to pest infestation.

Finally, if pests are found which have already infested your collection, several immediate steps should be taken. First, any infested object must be isolated from the remainder of the collection immediately. The object should be tightly sealed in a plastic bag or plastic sheeting. Next, the object should be thoroughly inspected and the type of pest identified. If insects are located, they should be removed from the object by vacuuming. Once this task is completed, the vacuum bag should be promptly discarded outside of your facility. In the event that you can't remove all the insects, which is very likely, further steps need to be taken to kill them.

In the past, the application of chemical pesticides was the preferred method for killing insects. However, as we learn more about the long-term effects of the pesticides to both objects and people, it's become apparent that pesticides aren't always the best solution to the problem. A method that has only recently become an accepted option for killing insects is freezing. Certainly, extreme cold temperatures are bad for an object, but on the whole, freezing is less damaging than the insects or the pesticides that have been used against them. The object should always be bagged in plastic before freezing so that it has its own microenvironment. Many insects have a natural form of antifreeze, so it's usually recommended to freeze the object twice for a period of forty-eight hours each time. It's always best to gradually cool and warm the object so that it's not subjected to an immediate shock as its temperature changes.

For those objects that are not conducive to freezing, such as large, dense pieces of furniture, you may have to resort to pressure fumigation. Vicane is currently an accepted fumigant for pressurization chambers and there are only limited operations that can supply this service. It's best to contact a major museum in your area for a source of museum-quality fumigation services.

When dealing with pesticides or any other chemical, always be wary of the product that you use. Secure informative data sheets about all of these products, share the information with the entire staff, and keep it on file in your facility.

Dust

Airborne particles are usually referred to as dust. Composed of microscopic chemical particles, dust is both an abrasive and a chemical agent. With the constant need to wipe and wash dirty objects due to dust particles, objects are subjected to an increased risk of minute scratches and possible breakage. As some dust particles combine with moisture in the air, acids are formed that eat right into an object. The best defense against dust is to limit its access into your environment.

Minimize the dust entering your facility by placing door mats both outside and just inside your entry ways. Weather stripping should be placed around all doors and windows to reduce air flow into the interior of your building. An air-filtering device as part of your heating/cooling systems also helps prevent dust from falling on the collections. Dust covers are an effective barrier between the airborne particles and objects. Unbleached muslin sheets are the preferred dust cover, but if plastic sheeting is used, insure that there is enough ventilation around the covered object to prevent moisture condensation.

Good housekeeping is probably the most overlooked yet most critical factor in reducing the build-up of damaging airborne particles. By maintaining an effective housekeeping program for your collections, much of the damage of the airborne particles will be eliminated.

Chemical Air Pollution

Chemical air pollution is closely related to the airborne particles/dust problem. Whether it's vehicle exhaust, industrial soot, fireplace smoke, or the outgassing from wooden exhibit cases, the air that surrounds your collections is subjected to many levels of pollution. Just as dust combining with moisture can form acids, the residue fallout of air pollution can be the source of a wide variety of damaging chemical solutions.

As outlined with airborne particles, take steps to minimize chemical air pollution from entering your facility. Restrict the use of unseasoned woods and plywood in your storage cabinets or exhibit cases. Place barriers, such as acid-free paper or mylar, between objects and the display area to prevent the transference of acids. For extremely fragile documents encapsulate them in mylar. Textiles can be stored in unbleached muslin bags and small air filters should be used in exhibit-case vents. Don't forget to perform daily to weekly housekeeping to prevent the build-up of chemical air pollution fallout on the collection.

Fire

Fire in your museum institution will cause vast amounts of damage to your entire operation. If objects aren't consumed by the fire, be prepared for smoke and/or water damage. Prevention is the best program to take when faced with the ever present threat of fire.

Good housekeeping, maintenance of electrical lines, fire monitoring systems, no smoking, and staff awareness are all important facets of a fire prevention program. Always keep a clean environment to prevent spontaneous combustion in your facility. Smoke alarms and heat-rise alarms can provide an early warning to the staff in the event of a fire. These devices should always be used within a museum institution.

The staff should be trained to use fire extinguishers and the extinguishers' location should be clearly marked. Local fire departments conduct training exercises on fire extinguisher operation and will also assess your facility with regard to fire potentials. Use this free service to augment your own in-house training programs. Another important safeguard is to know where the natural gas and water main lines shut-off valves are located. When a fire ignites, the gas lines should be turned off immediately and when a fire has been extinguished, water lines should be turned off to prevent excessive water damage.

People

People are the greatest source of damage to interpretive collections in the museum environment. Both visitors and staff make up this collective group of destructive agents. Many of the treasures that we are intrusted to interpret and protect are the same objects that are subjected to vandalism and theft. Regardless of all the security devices an institution uses, it still boils down to the staff ensuring all collections are adequately secure from the public. With the assistance of alarm systems, stanchions, barriers, or special locking hardware, the entire museum staff must assume the responsibility to monitor and protect its collections.

It's estimated that approximately 15 percent of the damage to interpretive collections comes strictly from the staff that is employed to protect it. Usually the damage occurs when objects are being handled or transported. We are always faced with the lack of time and proper resources to do our job, but we should not sacrifice the objects we are entrusted to preserve through haste and insensitivity. Accidents will happen, but casual indifference to the collection is unacceptable.

Training programs on caring, handling, storing, and transporting collections should be an ongoing part of your institution's operation. Sensitivity and awareness are key elements to a professional attitude within the museum environment. With the rising costs of conservation and the fact that many of the objects are irreplaceable at any cost, museums can not afford a poorly trained staff.

Conclusion

Ongoing programs in the field of collections management are the foundation to any successfully run museum operation. Knowing the "agents of deterioration" will not be enough if you are to have a positive museum environment. You must provide an ongoing program of monitoring and maintaining all conditions if you are to protect and preserve your interpretive collections. Schedules should be established for the regular inspection of all objects and good housekeeping must always be provided.

The field of collections management is constantly growing and changing and it's vital to keep up with the current resources and techniques. Find the time and resources to attend collections management workshops and seminars. Develop a collections management library for your institution and establish a network with other museum professionals in your surrounding geographic location. And lastly, always avoid haste in regards to any collections management activity. Take the time to find the best procedures and program for properly maintaining your museum environment.

Bibliography

Lewis, Ralph. 1976. *Manual for Museums.* National Park Service, Library of Congress. Washington, D.C.

MacLeish, A. Bruce and Per A. Guldbeck. 1986. *The Care of Antiques and Historical Collections.* The American Association for State and Local History. Nashville.

Plenderleith, H. J. and A. E. A. Werner. 1974. *Conservation of Antiques and Works of Art.* Oxford University Press, London.

Sandwith, Hermione and Shelia Stainton. 1985. *The National Trust Manual of Housekeeping.* The National Trust, Penguin Books. London.

Stolow, Nathan. 1979. *Conservation Standards for Works of Art in Transit and on Exhibitions.* United Nations Educational, Scientific and Cultural Organization. Paris.

Thomson, Garry. 1978. *The Museum Environment.* Butterworths. London.

Interpreters in the Legal Arena

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Abstract

Knowing the legal ramifications of your advice to visitors can help prevent your agency from being involved in lawsuits. Four examples are given of interpreters giving information to visitors which inadvertently led to injuries and fatalities thus legal action. Suggestions are provided to help interpreters avoid similar incidents.

Introduction

The title of this presentation was suggested by a nonlawyer colleague. I turned to my handy Webster's, and discovered that "arena" is defined as "any place or sphere of struggle." Struggle: to make great efforts, to strive, to labor, to fight violently, to engage in conflict. "So," I thought to myself, "that's how those interpretive types view the role of the lawyer. Someone with whom to do battle. I reckon I should rise to the occasion and give 'em what for!" My approach, therefore, may be somewhat combative. I want to tell you about a few times when the interpretive specialist has blown it; when lawsuits have been the direct result of inappropriate employee actions, and then to analyze what we could do (Working together? A truce, perhaps?) to prevent similar incidents. These are all based on actual incidents although I have simplified the facts and changed the names.

Interpretive Errors--Actual Cases

Charlie, a recreation leader in the midwest, was going to bring a group of children to a national park, so he came out a couple of weeks ahead to gather information, make plans, and prepare himself. After collecting printed material, he sought out the ranger to ask additional questions. "I'm looking for a safe place to take the kids swimming. Where should we go?" he asked. The ranger replied, "Down there, at Rainbow Pool. That's where everyone goes, and that's where I recommend you go." Charlie and his companions went to the designated swimming area where there were a number of people swimming and diving. After swimming awhile, Charlie climbed out onto a rock and dove into the river. He hit his head on a submerged rock and broke his neck.

The McCullum family had been looking forward to their camping vacation for a long time. The day finally came, and they loaded their gear and took off for the state park. As they arrived at the campground, they asked the ranger where they should pitch their tent. "Right over here," she said as she directed them to a specific campsite with a picnic table and fire ring. The family followed her directions, erected their tent, and hurried with supper since it looked as if it might rain. During the night, the wind came up and blew a standing dead tree, a snag, over onto the tent, killing Mr. McCullum and injuring one of the children.

The Schultzes, an older couple, visiting Yellowstone for the first time, were a little nervous. They had heard stories of bear attacks. Mr. Schultz took the advice of the brochure which they had received when they drove in. It said: "Ask the people in uniform. They are here to help." So he asked about the likelihood of bears in the campground. The ranger assured him that the bears didn't attack unless they were provoked, and that, at any rate, there were no bears in the vicinity. What the ranger failed to mention was that there had been an unprovoked bear attack in that very campground just two nights before. The couple was attacked as they slept that night.

Michael, an athletic-looking man, drove his station wagon into the visitor center parking lot and, in front of the ranger, proceeded to flip his wheelchair out of the back, pull himself into it, lock the car, and jump the curb. The ranger was impressed. Mike wheeled over to the recreation specialist and asked about the accessibility of the trail. "You won't have any problems at all" the ranger assured him. After all, hadn't he just jumped the curb? And besides, the ranger had attended an in-service program which said that we must be more sensitive to the needs of special populations. If it were not for several strong campers who assisted Mike by carrying him and his chair up the trail after he had become seriously dehydrated, he would still be at the bottom of the canyon.

Where Did They Go Wrong?

I've chosen these examples deliberately. The actions of the park employees aren't outrageous--they aren't the kinds of things that when you hear them, you say "How could anyone be that stupid?!" Yet, each of these examples resulted in visitor deaths or serious injuries, and each resulted in agency liability. That is, the courts said that the agency, through its employee, had behaved inappropriately and had failed to meet the standard of care which it owed the park visitor. Were these evil employees? Did they knowingly and recklessly set out to injure park visitors? Is there a grand scheme for population control circulating throughout visitor services? Of course not! The park employees were trying to be helpful, trying to give assurances to timid and cautious visitors, and also trying to give useful advice. So where did they go wrong? When they went beyond the scope of their knowledge. When they were negligent.

Okay. Here we go--slinging legalisms. What's negligence? Negligence is the failure to use the skill, prudence, and diligence which an interpretive specialist or other park or recreation employee of ordinary skill and capacity commonly possesses and exercises in the performance of tasks which he or she undertakes. In terms of trained professionals, "ordinary skill and capacity" means that level which is accepted as reasonable within the profession. Negligence involves an act which a reasonable person would recognize as involving a risk of harm to another. It requires an analysis on the part of the employee. Analysis? Yes, but...We're not talking about Euclidian theories or the confocal hypergeometric differential equations. What I mean is that you must give some thought to the outcome of your behavior. What actions might reasonably flow from your conduct? What consequences are foreseeable? How do you know that the person carrying that fancy climbing gear actually knows the difference between a couloir and a snowfield? Do you depend upon maintenance crews to report on the condition of the broken picnic tables? The public has a right to rely on you. If you tell me "I know you can do it" as I attempt to jump a narrow chasm, I have a right to turn and say "no, you were wrong--I couldn't" after I fell to the bottom.

What I'm suggesting is that interpreters have a special relationship with the park visitors. Because of this relationship, there may be a modification to the general standard regarding the duty of care owed to others. But I'm getting ahead of myself. We need to discuss this "general standard" before we can look at modifications.

The Negligence Equation

To demonstrate that an agency (through its employee) has been negligent, a plaintiff must prove four things. The first of these is that he or she was entitled to protection in these particular circumstances. The shorthand way of referring to all of those considerations is--duty. This generalized duty is one of reasonable care. The determination of what is reasonable depends upon a variety of variables including whether or not a specific rule or statute was violated, what the standard practice is, the degree of danger involved, the availability and cost of preventive measures, and so forth. The second element in the negligence equation is that the defendant breached this duty--that is, that she or he failed to act reasonably by violating the rule, by not recognizing the risk involved, by not warning the visitor, by not following customary practice, etc.

The third and fourth elements which the attorney for the plaintiff has to demonstrate are that there is an injury, and that there is a connection between the actions of the defendant and the injury that the plaintiff suffered. The fact of injury is generally fairly straightforward and easy for the plaintiff to prove, although the severity and future costs may be in controversy. The existence of the causal connection, however, is frequently a matter of dispute. Let me use a hypothetical diving accident in a state park to illustrate this point.

Assume that a group of college-age males had spent the afternoon swimming, studying, and drinking beer in the park. One of the boys who had been on the college diving team went to the edge of the lake and, without checking for hidden hazards, dove into the water. Assume further that he hit a submerged rock and broke his neck. The state park officials will contend that even if there had been a sign saying "No Diving" this would not have prevented the drunken plaintiff from diving with his friends into the dark and untested water. They will say that since the plaintiff already knew that he should check the area before diving, there is no connection between their failure to warn about the rocks and the action of the plaintiff. If this connection is missing, then there is no liability. In fact, if any one of the four elements is missing there is no agency liability.

That "Special Relationship"...

Now let's go back and examine that "special relationship" which I mentioned earlier. The duty which an interpretive specialist owes to a park visitor is one of reasonable prudence under the circumstances. While each case will eventually be determined separately, I would suggest that one of the most influential "circumstances" which the court would examine would be the position of authority and source of knowledge of the employee. We know that people look to uniformed personnel for leadership and information. They place the ranger on a pedestal and expect him or her to know everything from the best place to eat to the origin of the name of the monkeyflower. (Those of you who have had your egos stroked by this phenomenon have done little to discourage it!) The park visitor is out of his/her element and accordingly defers to the expert. It 's possible that the courts would view this position of authority as creating a "stepped up duty" to the visitors.

A few of the situations where the general duty of reasonable care has been raised or lowered because of some special relationship existing between the parties include those between a possessor of land and entrants on the land, between a common carrier and its passengers, and between a social host and her guests. The duty owed by a landowner to a trespasser, for example, has historically been very low. Even so, the trespasser is not entirely without rights; the mere fact that he is a trespasser does not justify the owner in shooting him on sight. Even in frontier days the landowner had to refrain from the intentional, willful, or wanton infliction of injury of the trespasser.

In most states, common carriers, cabs, buses, and airplanes (but not ski lifts) have been held to a higher duty to ensure their passengers' well being. The justification for this has to do with the source of control and reliance; that is, when a passenger boards a plane he or she does not realistically have the opportunity to check either the credentials of the flight crew or the maintenance log. In recognizing that the carrier has access to superior information, and has complete control over the movement of its passengers, the courts have increased its responsibility to use this information for the safety of the passengers. This standard has been called the "highest degree of care," "extraordinary care," "utmost care," and a "very high standard."

We should note, at this juncture, that courts in several states have criticized the modifications of the standard of reasonable care. One court observed:

> Negligence is defined...as the failure to employ reasonable care...That being so, it may well be asked whether it is ever practicable for one to use more care than one reasonably can; whether it is ever reasonable for one to use less; or whether, in sum, there can ever be more than one degree of care. And, indeed, it has been said that to grade care into degrees, to differentiate between various degrees of care, is...perplexing...[1]

In spite of the confusion created by the presence of varying degrees of care, the courts have continued to consider the totality of the circumstances of the relationship between the parties involved and to make distinctions based upon the interpretation of these relationships. Absent a rigid statute defining responsibilities in all circumstances (an impossible task for the lawmakers), this is the best alternative available.

This brings us back to the role of the interpreter and his or her responsibility for visitor safety. Just exactly what will the courts require? It's easy to analogize between the stepped up responsibility of the common carrier and that of the park employee. The employee is in a superior position. He or she has more knowledge about the existing

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1. McLean v. Triboro Coach Corp., 302 N.Y. 49, 51, 96, N.E. 2d 83, 83-84 (1950).

hazards and the degree of risk involved. What the employee doesn't know, however, is the degree of expertise which the visitor has. It seems logical, therefore, that the interpreter should convey only the knowledge which he or she has, that is, the risks inherent in the environment. Describe the trail conditions but don't offer your opinion about whether the visitor is able to handle it. Warn about changing weather conditions in the mountains (a situation which you might think everyone understands) and refrain from reassuring the visitor that "the weather looks good this afternoon."

In determining whether any interpreter has behaved responsibly, the courts will look to see just exactly what was done in the specific situation where the visitor was injured. It's not good enough to say, "I usually warn visitors that this trail has loose rock and a 40 percent grade." It won't help to testify that the lifeguards are alert most of the time if they were asleep when the plaintiff's decedent drowned. Did your behavior recognize the special relationship between the visitor and the employee? Did you make unwarranted assumptions? Did you go beyond the scope of your knowledge? As you read these questions, it should strike you that this is not particularly "legalistic." In fact, it's just good common sense. Of course, some familiarity with basic legal language and principles is of value in understanding how this common sense is translated by lawyers in their arguments to the courts. But there is also some danger...the possibility that you and other park and recreation professionals will become so caught up in legal concerns that you will actually become less professionally proficient and, ironically, no more likely to escape potential liability than if you had no legal knowledge at all.

Conclusion

Each of the fifty states has its own jurisprudence. Statutes, court decisions, and administrative procedures vary considerably. Further, it's the genius of the Common Law that broad and often contradictory legal principles are applied through our adversary procedures to an almost infinite variety of fact patterns. Recreation professionals would like certainty or at least a high degree of predictability in considering the legal consequences of their actions. Therefore, we tend to overstate the significance of a particular case. Lawyers know that, at best, prior cases provide guidance for legal argument. Cases from other states or even other courts within your own state may be ignored or contradicted. Jury verdicts may be highly publicized, but they are often reversed, or the amounts of their judgments sharply reduced. Finally, attorneys work hard at pointing out the factual distinctions between the situation which you may confront and previously decided cases.

In conclusion, take the legal material with which you are bombarded with a degree of skepticism. Often the "told for true" horror stories are just that--stories.

TREKs--An Alternative to a R.O.P.E.S. Course

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Abstract

A TREK is a number of initiative games, put together in a story-line fashion. After an introduction by a facilitator concerning leadership, cooperation, and safety, a group is given a packet of information of specific clues that will enable that group to hike from one initiative station to the next. The importance is not getting from station to station, but what happens within the group along the way. Using a TREK program is a successful tool in getting a group to work and learn together.

Introduction

How do you make people work together? How do you make them realize they can do more and are more than they themselves realize they are at any given moment? Even if you know they are, you can't tell them, they won't believe you!

TREKs has become a tool that has enabled us to help people grow, both personally and as a group. Our first acquaintance with TREKs (a division of the overall R.O.P.E.S. program) came at Tamarack Camps of Ortonville, Michigan in the spring of 1987 with Joan Lipsitz of International Field Studies Michigan, Inc. Most R.O.P.E.S. programs bring to mind the physical course, set up in a forested area, with many types of obstacles (using ropes) strung out between the trees. Our term R.O.P.E.S. takes on specific meaning, rather than just the physical aspect:

R = Resourcefulness
O = Opportunities
P = Perseverance
E = Encouragement
S = Skills

At first we concentrated on other areas of the R.O.P.E.S. program of Tamarack Camps: initiatives (problem-solving tasks), low ropes (physical obstacles no higher than five feet above the ground), and the climbing tower (a physical structure to climb on). These things took the most time to learn. But after working with numerous school groups, we realized that TREKs were less expensive, safer, easier to maintain, and in our judgment a better way to achieve group personal growth.

The TREK can be modified to fit the needs of the particular group you are working with. Initiative games can be made easier or more difficult depending on the age of group members. If you have a class that is not working together because some of them are quiet, designate the quiet ones as the leaders. There are as many ways to modify the TREK as there are types of groups.

Objectives

There are six objectives for the TREK experience. They are to: learn to work together, understand one's potential, gain self-confidence, develop organizational and listening skills, develop problem-solving techniques, and establish group support systems through cooperation and communication.

Materials Needed for the TREK

The basic TREK materials consist of: one manila envelope, a pencil and paper, compass, maps of the area, an opening letter (Figure 1), clue #1 (Figure 2), and written clues placed in sealed envelopes (the facilitator keeps these until the group reaches each designated spot where the group is then given the next clue).

A trained facilitator sets up all initiatives in appropriate places and accompanies the group on its TREK to facilitate the group process.

The TREK Process

The facilitator learns from the group's leader what goals he/she is looking to obtain from the TREKs. Then it's up to the trained facilitator to meet these goals by giving the particular TREK its direction. Next the facilitator pulls together the material needed for the TREK (this also means setting up the initiative games) and then meets with the group to begin the TREK. After the facilitator designates a time keeper, leader, and recorder, he/she gives the leader the manila envelope containing all of the materials their group needs to get from one initiative game to the next. Then for the next two to six hours the facilitator must facilitate the group process as the TREK continues.

TREKs can last anywhere from two to six hours, they can be done in any outdoor setting (I bet they could even be set up inside), any time of year, and for any group (school groups, special populations, employees, executives, etc.). The best group size seems to be twelve to twenty.

Training of Facilitators and Safety

It's through a certified training program that the facilitator experiences, learns, and then practices the processing or facilitating techniques. It's the ultimate responsibility of the facilitator to bear the burden of both the physical and mental safety of each member of the group in the program (Figure 3).

Bibliography

R.O.P.E.S. 1988. Published by the Tamarack Hills Authority, Ortonville, Michigan. Revised by Sarah and Will Reding. April.

Darst, Paul W. and George P. Armstrong. 1980. *Outdoor Adventure Activities for School and Recreation Programs.* Burgess Publishing Company. Minneapolis, Minnesota.

Rohnke, Karl. 1977. *Cowstails & Cobras: A Guide to R.O.P.E.S. Courses, Initiative Games, and other Adventure Activities.* Adventure Press, P.O. Box 157, Hamilton, MA 01936.

Reding, Will & Sarah. 1946-1988. *On The Job Training.* Yet to be published.

Figure 1. Example opening letter given to group at start of TREK program as part of basic materials.

The MAAS Challenge

We welcome you and your group to Tamarack Camps! Our Outdoor Education Consultant, Will Reding, has appointed your seasoned group, from Davisburg Elementary School to explore the regions known as the "Tamarack Outback." Your tasks will be to increase personal leadership skills, efficiently solve problems, and to return safely. Your group should complete its TREK with information on how to best manage stresses and challenges in the uncharted territories which lie ahead.

With the aid of a map and compass, you must follow the directions for each leg of the TREK. A courier has been appointed, by Mrs. Aleo, to hand drop important instructions at specific times and places.

You must hold tight to all appointments.

Good luck brave travelers...the exploration of the "Tamarack Wilds" rests on your shoulders."

Open this package and read message #1

Figure 2. Example clue #1 given to group at start of TREK program as part of basic materials.

Trek A--Begin at Berman Field

A. 1. Like all good explorers, you must take on the real wilderness challenge and travel across the countryside at a course of 197 degrees until you reach the Tamarack Teeter Totter on the old wagon road. You have 30 minutes.

A. 2. Located in front of you is a magical teeter totter. Your task is to get your entire group of participants to balance on top of the beam at "one time." You may only get onto the beam while standing "outside" the roped off circle. Safety is of the utmost importance. You have 40 minutes.

Figure 3. The facilitators responsibility--the R.O.P.E.S. certification program.

R.O.P.E.S. Certification

Individuals who wish to be certified as a R.O.P.E.S. Course/Initiative instructors must participate in the training certification program. No one will be allowed to work with participants in a R.O.P.E.S. course or initiative activities until they have been certified.

To become certified an individual must participate in the following:

Training

Training includes three phases:

1) Experiential--serve as a member of a group and experience the same fears, stresses, challenges, and hopefully growth that students experience on the R.O.P.E.S. course, initiatives, and outdoor living. The outdoor living aspect of the training should include no less than two consecutive overnight camp outs.

2) Skill Development--learn as procedures are taught and demonstrated and skills practiced.

3) Practice--work with students under the direct supervision of a certified instructor.

Certification

There are two levels of certification which may be granted to an individual. These are described below:

Level II Certification

Successfully complete a recognized R.O.P.E.S. training program and demonstrate basic skills and knowledge of procedures (i.e. spotting; belaying; fitting harnesses and helmets; low-course safety inspection; knowledge of program, philosophy, and goals). Level II certification allows a person to assist with R.O.P.E.S. course/initiative activities under close supervision of a Level I certified instructor.

Level I Certification

1) Successfully assist a Level I certified instructor with a minimum of two separate groups through a R.O.P.E.S. course/initiatives experience and

2) Successfully lead a group through a complete R.O.P.E.S. course/initiative experience under the supervision and advice of a certified instructor designated by Tamarack Camps. Failure to properly execute any critical-risk-oriented procedure will terminate the session. The session may be rescheduled when the trainee is better prepared.

3) As of June 1987, instructors should have current CPR and First Aid Certification.

Maintaining Certification

1) Lead (Level I) or assist (Level II) a minimum of one group every six months in a R.O.P.E.S. course/initiative experience which includes: setting up belays; R.O.P.E.S. course inspection (high and/or low); facilitate wall and/or beam, low course, high course, and climbing tower activities (if available), or

2) Lead (Level I) or assist (Level II) a minimum of one group and participate in a minimum of one R.O.P.E.S. review session each school year. Review sessions will be offered regionally or locally in the fall and spring. Special review sessions can be arranged locally on request.

Recertification

Instructors who fail to retain certification may become recertified by:

1) Participating in a R.O.P.E.S. review session, and

2) Leading (Level I) or assisting (Level II) in a R.O.P.E.S. course/initiative experience under the supervision of an instructor designated by the local director or the Southeast Michigan R.O.P.E.S. council.

Revoking Certification

Certification may be revoked for any person who misuses the R.O.P.E.S. course/ initiative site and/or jeopardizes the safety of participants.

Archaeological Relationships...A Long-term Commitment

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Abstract

This paper will heighten your awareness and increase your sensitivity to the value of cultural resources and archaeology. What's the intrinsic value of an artifact? What intangible information lies in the soil? Why be concerned about these nonrenewable resources? Archaeological interpretation is important for the future of archaeology and our heritage.

Introduction

What's archaeology? What does an archaeologist do? Where does an archaeologist work? What are an archaeologist's concerns? Why is record keeping so important to an archaeologist? How important is an artifact?

These are the major questions concerning the field of archaeology. The answers should be well understood by any interpreter undertaking a program on archaeology. In addition, the process of archaeology, from site recording to excavation and analysis, should also be understood.

Where can the materials for archaeological programs be obtained? What kinds of programs have already been developed? Where can an interpreter get advice when trying to develop an archaeological program?

There are numerous places to obtain materials for archaeological programs. Some materials are very easy to acquire and are inexpensive, other sources may be expensive, while some materials are very difficult to get.

Concepts

What's archaeology? There are many definitions for archaeology. As with many professions, no one single definition gives the real intricacy or breadth of the field. The three following definitions cover the major aspects:

1) The study of ancient or very old things.

2) The study of man's history through his material culture.

3) A technique of studying man's past through excavation.

As we can see from these definitions, archaeology deals with man, artifacts, and a process by which the relationships of the past are recovered. Although most people tend to be enthralled by artifacts, this is only one small segment of the archaeology field.

Artifacts are very important to the study of man's past, but they have to be put into perspective. They tell us many things about people's lifestyles including: what the people were trying to accomplish, where materials were obtained, what trade networks were established, what the people's values of beauty were, and what the people's relative wealth was.

Much of this information doesn't come from looking at any one artifact, but by examining groups of artifacts, assemblages, that come from a particular deposit. It's the assemblage combined with the other information that's recovered from a site that provides the most complete picture of the past.

There is a great deal of nonartifactual information recovered from archaeological sites during excavation. Some of the information may be carbon samples that can provide dates for the deposit, pollen that will help to reconstruct the past environment, faunal remains that provides information on the diet of the inhabitants, and soil variations that contribute to the understanding of the activities that took place in a particular area.

Although it's easy to understand the value of the tangible remains, the intangible remains that exist only in the soil are usually the most valuable and the most difficult to record. These remains may be variations in the compactness of the soil and/or changes in color, texture, or composition of the soil. Unfortunately, the process of excavation destroys these intangible remains. It's of the utmost importance that excavators are able to see, understand, and record accurately what they unearth.

These changes in the soil may be a product of human activity or a natural process. If the area defining a particular change is small, archaeologists call these features. A change that represents a unique depositional event is a stratum. The relationships between the strata, features, artifacts, and nonartifactual constituents of an archaeological site represents the total information that's available.

As an excavation proceeds, it's important to remember that any information that's not adequately recorded is destroyed. The relationship that was maintained over the millennium between the soils and the artifacts is gone forever. The process of excavation is destructive to this nonrenewable resource.

Programs

Before preparing a program, it's vital to understand the entire archaeological process from site recording through excavation and analysis. It's also essential to work with archaeologists or to take a field class to learn archaeological excavation techniques. The tools, techniques, and some of the concepts are unusual and specialized.

Certainly the best type of program is hands-on excavation where the participants can experience strata, features, artifacts, and nonartifactual materials in a situation where their inexperience will not destroy valuable archaeological deposits. This type of situation can be provided by fabricating a stratified deposit using various soils. Features can likewise be fabricated. Post holes, fire hearths, and compacted surfaces can be provided with a minimum of equipment. However, the preparation of this type of program is very labor intensive.

An area eight-feet square with five different strata, features, artifacts, etc. can be produced in under three person days. The complexity of the deposit will dictate the time that it takes to fabricate it. The more effort put into the deposit, the more believable it will be for the participants.

It's best to have one group of ten work on an area no bigger than four feet by eight feet. In this way you have prepared two areas that can be excavated by two groups of ten. Excavation time for each four foot by eight foot area is one-and-a-half to two hours.

If your time and resources are limited, there are a couple of less involved programs you can create. These are more versatile and can be used inside or outside. The first uses soft sculpture, Styrofoam, or other medium to replicate strata and features. Artifacts and other cultural debris can be attached to the media by glue or left loose so they can be gathered as the site is "excavated." This is a model and can be built to any scale you desire.

The other program involves illustrating stratigraphy and features on a chalkboard or easel. Squares representing excavation units are laid out on the floor or ground, each representing a different stratum. Artifacts and other cultural debris are placed in the squares.

In each of the programs, the objective is to record as much of the information as possible by mapping, photographing, and other means. The materials are analyzed to answer typical questions that are asked of archaeologists. These may include: How many people are represented by a deposit? What is the ethnicity of the people? How long were they here? What were they doing here? How well developed is their distribution or trade system? What is their relative wealth?

Materials

The materials available for archaeological programs are vast. Nearly anything made by man can be used. The following list provides a variety of sources for materials.

1) Modern garbage--Go to any garbage can or dumpster including your own. Useful materials may include bags of used fast-food containers, glass, cans, and plastics. Most people can relate to these materials because they are familiar with them.

2) Yard sales--Glass, ceramics, plastics, and some unusual items can be obtained this way. These materials may range from a few years of age to roughly 50 years of age, are relatively cheap, and can be used whole or broken.

3) Antique stores--Older materials are usually available through these stores, but the price may be prohibitive. Most people would not want to break an expensive item for a program. Items can be found here that may better represent varied economic classes.

4) Replications--Some copies of historic materials are available through various outlets. Flintknappers can make flakes, arrowheads, and other flaked stone tools. Try contacting an archaeologist for sources if you can't locate them yourself.

5) Archaeologists--Sometimes materials are available from collections that are no longer needed after the analysis phase of a project is complete. This can be a very sensitive issue, and you will probably find these kinds of materials generally unavailable.

6) Soils and other natural materials--Nurseries carry various types of mulches, barks, and sand that can be used for various strata. Stream cobbles can be used for Native American hearths and other features. Ashes are available from stoves, fireplaces, and barbecues.

Conclusion

Archaeological programs can be developed on several levels depending on the audience, the resources available, and the time and energy that you want to devote to the project. Programs that are already developed can be copied and used, or new ones can be developed. Whatever program is used, it should cover the archaeological concepts of stratigraphy, features, and their relationships to each other.

It's imperative that people understand the delicate nature of the resource, that its nonrenewable, and that excavation is a destructive process. To preserve the information in archaeological sites, everyone must be sensitive to the resource. By presenting archaeological programs, you help preserve ours and other's heritage.

Holistic Interpretation--A New Trend for Zoos

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Abstract

The future for many zoos, in terms of active and passive education, will be toward holistic interpretation. At the Tulsa Zoo, the education philosophy is to help people of all ages develop a better understanding of the natural world. That's a rather broad interpretive approach and encompasses geology, plants, animals, cultures, and their intra- and inter-relationships.

Introduction

The master plan of the Tulsa Zoo calls for us to complete a series of "Living Museums" which offer regional interpretation through living collections and static exhibits that include geology, plants, animals, cultures, and their intra- and inter-relationships. Since our collections are worldwide, we can address many conservation issues, such as the destruction of the rain forests. In doing this, however, the approach is more than just the ecological consequences. It has to do with profiteering, aculturation of native peoples, and the rain forest's role as a natural resource.

Current examples of our Living Museum programming include a fourth-grade environmental education program designed to help students understand that the natural world is made up of many different parts--living and nonliving. Touch carts, containing a variety of natural history materials, are stationed at locations throughout the Living Museums for one-on-one interaction with zoo visitors. A program emphasizing the interrelationships of the prairie ecosystem is brought to fifth- and sixth-grade classrooms in Tulsa as part of our Wildlife On Wheels series. Summer classes for children include programs on Native American cultures, and archaeology classes/field trips for adults are all conducted with a view towards the interaction of people with their environment.

Holistic Interpretation: What Do We Mean?...

Our education philosophy is to foster a better understanding of the natural world. Your response to that might be, "Doesn't everybody do that?" My response might be, "Not quite." Natural history information in zoos is usually only animal oriented, as if the animal exists alone. That information may be restricted to what they eat, what eats them, reproduction, various behaviors, and specific adaptations. Very little time and exhibit space is spent interpreting ecological aspects; that is, intra- and inter-relationships. At the Tulsa Zoo, this is our approach. Added emphasis is placed on cultures, including levels of social and technological development, perceptions, world view, economics, and politics. All have an impact on conservation efforts. Many primitive hunting/gathering societies had and have a better understanding of their ecosystems than do users such as we. Our catch phrase for this all inclusive approach is Holistic Interpretation.

We shall develop a regional series of living museums which feature this integrated approach. The first of these, the North American Living Museum, was opened to the public ten years ago. Our best efforts still don't compare with outdoor experiences since we are still dealing with captive populations and museum graphics. But on the other hand, we fill a certain niche that nature or outdoor education centers don't. Our collections are worldwide and if we wish to address global conservation issues, we may have endangered plants and animals from those regions--and from different areas of the United States for that matter.

Conservation, a Modern Zoo's Role

The best place to preserve wild populations is in the wild. No conservation policy supported by an institution or other organization is worth anything without the stipulation that habitat be preserved. Zoos breed endangered species but have to contend with the special problems of small-population genetics. Inbreeding, depression, and random gene fixation in small populations cause loss of genetic diversity, sometimes resulting in pathological conditions or captive populations becoming genetically dissimilar to wild ones. Information such as this should be incorporated into the overall interpretive message.

If we were to construct an exhibit or prepare a program on the Amazon, the message would be more than just the ecological consequences of clear-cutting Brazilian forests. What about considering native populations as part of the resource? World Wildlife Fund botanists are spending a good deal of time interviewing Amazonian tribesmen about medicinal plants, before the knowledge, people, and plants disappear. We would have to discuss third-world problems, politics, and attitudes. This is holistic interpretation. In this case we're including information on obstacles in the path of a solution.

Program Examples, Just a Few...

Many programs are offered by the Education Department at the Tulsa Zoo. Many are fun activities and totally recreational, some are family classes about the zoo and its collections, others have rather pointed messages about ecology, conservation, and how each of us sees our world.

Our fourth-grade environmental education program emphasizes that the world is made up of many parts, some living such as plants and animals and others nonliving such as soil, air, and water. It stresses that all of these parts interact and are dependent on each other. The program also reinforces that living things are important in their own right and aren't here for human purposes. Our Living Museum enables us to conduct this program more effectively.

One of the "out-of-zoo" programs is entitled, *Where Has All The Prairie Gone*? Changes in the prairie ecosystem over a five-hundred-year period are presented to fifth- and sixth-grade students. They are allowed to develop their own conclusions about what affected the changes. This program is enlightening in that it reflects on other conservation issues by using elements the students know.

Programs on Native American cultures are presented to all age groups including simulated digs, stone tool making, prehistoric diets and food preparation, Southwest and Mesoamerican archaeology, and reflections on human perceptions. Field classes in Southwest archaeology are conducted yearly and human ecology and perceptions are emphasized.

Reflections

Zoos should take a more active role in interpreting the natural world and the unnatural one as well. Conservation issues can be addressed effectively, including our limitations. Zoos can no longer follow narrow interpretive guidelines. For the Tulsa Zoo the holistic approach has been extremely successful in giving individuals a historic and well-rounded view of the world.

Underwater Parks--An Interpretive Challenge

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Abstract

The 1,000 mile coastline of California is widely known for its ecologically diverse and productive marine environment. As a measure of the special nature of these marine resources, the State Department of Fish and Game has set aside 44 areas under specialized protection from collection and harvesting of some or all species. Similarly, the Department of Parks and Recreation has had the foresight to develop a master plan for underwater parks. Currently there are twelve underwater parks, three of which have special protection for marine resources. The master plan calls for the addition of two units per year with the ultimate goal of 43 underwater parks. Several other countries are establishing marine park systems including Japan and Australia.

Aquatic Resource Use at a Glance

The richness of these marine resources, as well as various socioeconomic factors, are encouraging large numbers of users. Their impacts on these resources are not fully identified or understood. Although several categories of use are involved such as beachcombing, tide pooling, shore fishing, inshore boat fishing, and skin and scuba diving.

The popularity of diving along California's coast has a growing impact on marine resources.

- A recent estimate indicated that California had 550,000 certified divers, approximately 37 percent of the certified divers in the U.S.
- Twenty-thousand new divers are added annually to the ranks of those using marine resources.
- At Point Lobos State Reserve, an estimated 4,800 divers use Whaler's Cove and Blue Fish Cove annually for photography and sightseeing.
- The Department of Fish and Game estimates that 132,000 skindivers and 68,000 shore pickers removed 1.5 to 2 million pounds of abalone along the Sonoma-Mendocino coast in 1977. At the estimated rate of 3.2 to 3.4 abalone per diver, this represents an annual take of over 422,000 abalone. At the modest price of 15 dollars per pound, a two-million-pound harvest represents over 30-million dollars.

- Twenty-thousand pounds of hydrocoral are harvested from southern waters annually with minimal controls and enforcement at a market value of 120,000 to 150,000 dollars.
- Sport diving generates approximately 60 million dollars in expenditures annually for gear, trips, and related items.
- Freshwater habitats are also being exploited.
- Over 1.4 million people pay fees to swim in East Bay Regional Park District (EBRPD) lakes annually, countless more wade into streams, ponds, and lakes to cool off and to explore.
- In 1987, over 106,000 people purchased fishing permits for EBRPD lakes.
- Cave diving has become a popular sport in recent years raising concerns about the protection of unique mineral formations and unusual cave vertebrates. There is now a national association for cave diving.

Accumulative Impacts

These statistics clearly indicate that not only are marine and freshwater resources economically valuable, but that there's tremendous pressure to see, photograph, and collect many of them. The impacts that result from this kind of intense and continued visitation can be subtle at first, but are unmistakingly cumulative. In some areas, evidence of severe impacts is accumulating faster than our understanding and ability to deal with them effectively in some areas.

Although no harm may be intended by the beachcomber, tide pooler, pond peeker, diver, photographer, or sightseer, the impacts of large numbers of unregulated, uneducated users may force some species to the brink as well as degrade habitat quality. Even though the decline of marine resources is commonly associated with overharvesting, pollution, and competition (as seen in the collapse of the southern California abalone fishery) the more subtle, but equally dangerous threat comes from too many people using the same resource too often.

The extent of the damage on marine and freshwater resources through trampling feet, removal for observation and return, anchor dropping and retrieval, scuba tank bumping, and fin contact is largely unknown, but it's probably much more extensive than imagined.

In popular dive spots like Hawaii, the Virgin Islands, Florida Keys, and elsewhere, there is an incredible level of anchor and anchor chain damage to live coral, sponges, and other fixed invertebrates. Along this coast, the extent to which hydrocoral and other sensitive fixed invertebrates are damaged or killed by anchors from dive and small fishing boats is unknown. But it's clear that anchor damage is a problem and a threat to maintaining the integrity of marine species and habitat in underwater parks.

These kinds of impacts combined with our lack of thorough knowledge of critical species life-cycle requirements, growth rates, and recruitments, as well as the general absence of carrying capacity ratios for sustained diver use, place several species and habitats in jeopardy unless an aggressive, imaginative management and interpretive program develops. The issue isn't necessarily preventing public access to precious aquatic resources or habitats found within underwater parks, reserves, or open public shoreline, but instead managing the resources in the same way we manage critical scenic and wildlife resources on land. This means regulating numbers and determining what activities are appropriate, where and when they should occur, and how these activities should be combined with a diversified educational effort.

Strategic Approach

On underwater parks John Veverka wrote "one of the best ways to handle management issues isn't to have to address them as they arise, but rather to plan ahead to avoid having them occur at all." This is offensive management. Practically speaking, we must look at marine parks and freshwater habitats with new eyes, borrowing experience from terrestrial land management strategies and employing imaginative techniques to plan for these resource issues.

We must develop:

1) Through resource inventories with key species distribution and status.

2) Regular periodic inventories to monitor the health of resources.

3) Cooperative research programs using colleges, universities, and park personnel with creative funding approaches.

4) Effective carrying capacities for all aquatic parks reserves and sanctuaries as a measure of limiting impacts by numbers.

5) Unit master plans that take into consideration resource quality and quantity, user patterns, and user surveys and interpretation as a management tool.

6) State-wide, multiagency cooperative resource management plans that will effectively look at multijurisdictional resources like hydrocoral, abalone, lobsters, sea otters, artificial reefs, historic sites, nesting and spawning areas, etc.

Only through such broad-scale, long-term strategies such as these and others can we begin to intelligently grapple with maintaining the long-term integrity of the resources we have been entrusted with.

Interpretation as a Management Tool

We all know that interpretation is a communications art. Through naturalists, booklets, brochures, exhibits, and media presentations millions of people are better able to enjoy the outdoors and appreciate the agencies' role in providing such services and facilities. Interpretation can be used as a management tool to encourage thoughtful use of park resources, reinforcing the idea that these places are special and therefore require special care.

In the EBRPD over 700,000 people participated in some form of interpretation in 1987 with 330,000 directly involved in naturalist-led programs. At Crab Cove Visitor Center and Crown Marine Reserve 41,000 people participated in our programs and exhibits in the same period.

At Crab Cove the focus of attention is on the rich abundance of intertidal life found within the rocky shore and mudflat communities at low tide. Because of the extensive illegal sport and commercial harvesting of littleneck clams, ghost shrimp, and shore crabs, and the associated habitat disruption that followed in the late 1970s a proposal for marine reserve status was submitted and subsequently approved by the State Fish and Game Commission. Since the establishment of Crown Marine Reserve most forms of harvesting have ceased except occasional poaching involving southeast Asian immigrants. Even though collecting is now minimal, the disruption associated with rolling intertidal rocks covered with tunicates, sponges, anemones, oysters, and other fixed invertebrates is significant since they are exposed to sun and wind. This situation requires continual monitoring, enforcement, and interpretation. Signs by themselves don't fulfill the need. A reserve in name only doesn't guarantee protection of the resource unless other assertive measures are planned and conducted by staff.

As a result of the persistent surveillance of the reserve key sport species have recovered in spite of scattered poaching. But now we are faced with an even larger danger, that of over use. Practically every low tide date is filled with school-group and general-public programs. We generally start each program with an orientation to bay food chains and marine-life interrelationships in the Old Wharf Classroom. This is particularly critical with school children because it affords us the opportunity to discuss appropriate behavior on the beach. Even though carefully watched by the naturalist it appears to be impossible for a school group to visit a rocky shore without some habitat and species displacement and damage. Thus, the question arises of how long it will take for this kind of carefully monitored and controlled use to show itself in the form of declining resources. Too many people using the same resource too often will ultimately take its toll.

We are dealing in the tangible realm of sheer numbers, the same situation faced at most of the popular intertidal areas along California's coastline. To manage the resource at Crab Cove more conservatively we need to analyze ways of limiting the number of schools using the beach resources at any given time as well as through the season. While individual use has not presented any serious problems to date, group use can be devastating. Essentially, we need to develop a functional carrying capacity for group use and open beach use with or without a naturalist to a reservations system with a specified limit of visitors per day.

At Crab Cove we are currently using every technique at our disposal to educate our visitors. This includes permanent staff naturalists on duty, a visitor center with exhibits on bay and ocean animals, pamphlets, books, and a family adventure pack that provides a self-guiding intertidal experience. We have produced a leaflet in four major Asian languages that explains what the marine reserve is all about.

Interpretive Tools

The following are some of the interpretive tools that can be provided for visitors in an aquatic park with or without a naturalist and visitor center:

- Self-guided underwater trails
- Self-guided underwater identification cards
- Self-guided intertidal trails and booklets
- Shoreline exhibit panels
- Shoreline video screens in a secure weather-proof wayside shelter
- Underwater interpretive signs
- Species or group nature-note handouts
- "What's happening underwater"--newsletters for divers and nondivers
- Guided shoreline walks at low tide
- Guided underwater tours for small groups by reservations
- Diver census: one-on-one interpretive contacts
- Informational floats anchored near interesting features
- Aquatic boat tours
- Glass bottom viewing tubes and boats

In all efforts made to interpret the nature and function of aquatic animals and habitats, the emphasis should always focus on interrelationships, interdependence, fragile resources, and safe use by divers and nondivers.

People must understand why certain areas are closed to access, why harvesting is prohibited, why the protected resources need to be protected, and how best to use them without serious disruption. These efforts encourage more than appreciation and understanding, they elicit the cooperation and support essential to effective resource management. Interpretation is clearly the front-line public relations extension of an agency and its management goals and through interpretation resource protection can be enhanced.

Summary--Interpreting Aquatic Resources

We must take an aggressive approach in studying, conserving, and interpreting aquatic resources. What is required isn't necessarily managing the dive industry, but developing a broad-scale approach to actively manage key scenic and wildlife resources, while allowing recreational pursuits to continue in a nondamaging way and diverting heavy impacting uses to areas of a less fragile nature.

Areas of high scenic or wildlife values attract large numbers of users. How we choose to manage these resources in perpetuity, while allowing appropriate, nonthreatening uses is a major challenge for the next several years. Effective and imaginative education is critical to this success and management.

Bibliography

Carlise, John G., Jr. 1982. *Artificial Reefs Off California--An Update.* Sea Frontiers, V(28:6), November-December.

Collier, Ken. 1981. *Underwater Parks Master Plan, California State Park System.* Department of Parks and Recreation. March.

Gibson, Mark E. 1981. *The Plight of Allopora.* Sea Frontiers. V(27:4), July-August.

Gray, J. E. 1978. *Park Systems Based on Underseascape--The Japanese Experience.* Australian Parks and Recreation. November.

Hay, Linda. 1978. *The Great Barrier Reef Marine Park.* Australian Parks and Recreation. November.

Mehlert, Charles. 1983. State Department of Parks and Recreation. Monterey, California, personal communication.

Russo, Ron. 1982. *Crab Cove--A Window into a Giant Estuary.* The Interpreter. Winter. Western Interpreters Association.

Shultz, Steve. 1983. California Department of Fish and Game. Fort Bragg, personal communication.

Veverka, John A. and Sandra A. Poneleit. 1981. *Interpretation as a Management Tool for Underwater Parks.* Association of Interpretive Naturalists Journal. September.

Mixing Interpretive Media: Death Knell or Creative Mind Expander?

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Abstract

Interpretation is a dynamic art. As an art it's always open to interpretation, experimentation, and reinterpretation. Today's computer-generated artistry boggles the human mind. Computer technology enables a person to vicariously experience birth, development, and the application of difficult concepts. Computer imagery can be expensive, but it's not beyond the reach of interpreters. When used in conjunction with other media, computer technology can be a powerful tool for people to experience a "happening" they may never otherwise encounter.

Introduction

Today, visual media offer an awesome array of technological feats to create visuals that entertain, excite, inform, and motivate. In the marketing industry, state-of-the-art feats are extremely effective. People are influenced. Product sales prove it. Sophisticated visual media technology isn't exclusive to marketing. It has great potential for interpretive services.

Today's interpretive services must do more than inform and educate people. Interpretive services must inspire and motivate people to support programs, to become involved, and to take pride in their community and country. Computer imagery was experienced by millions of viewers during the broadcasting of the '88 Olympiad. In interpretive programs, computer imagery is an underused tool, but the technology is expensive. Cost per minute of final program can run from 500 to 50,000 dollars. Does that means it's inaccessible to you? Maybe. But I think not. It means you have to be selective as to why, when, and where you use it.

State-of-the-art Technology

What is computer imagery? It's any image created through computer technology. The peacock logo of the National Broadcasting Company, the images in the '88 Olympiad announcements, and many television advertisements are computer imagery. Modules created for the *Tree Management Series* use computer imagery that challenges both the audience and interpreter. When computer imagery marries animation to two-dimensional graphics, an illusion is created of space and time. The viewer internalizes the illusion and an emotion is experienced. Computer imagery allows you as the interpreter to control the form and feel of the message. An idea can be succinctly put across. In marketing, it's to get the viewer to buy. In an interpretive program the idea is to have people experience a "happening" they may never otherwise encounter.

Concepts can be a "happening" that are difficult to experience, especially when time is involved and the elements of the concept are hidden. Time dependency and the hidden nature of a "happening" are reasons for using computer imagery in interpretive programs; sequential events that develop slowly in nature can be accelerated and illuminated in the present.

The process of growth, protection, and decay in living trees is a good example. Few people know how a tree grows, why it grows, or how a tree's growth behavior protects it and people. The fact that a green tree can be rotten or that it can hurt people is not known by most people. Movement and action of computer imagery provide the elements essential to create a vicarious life-like experience of processes within a tree. Once a process is experienced, less expensive media such as slides, overheads, or posters can be used to stimulate the mind to reexperience the computer-generated illusion.

Computer imagery does have a place in today's interpretive programs. It can help people to experience concepts, visualize the unseen, and discover hidden events. Why then isn't it used more by interpretive services? I believe the cost of computer imagery and rules you have been taught about media productions have kept many of you from taking the plunge.

The Rules

When it comes to communicating effectively, there's but one rule, "throw out all rules." Do whatever you have to do to get the message across. Don't get hung up on what you were taught, told, or read about the art of interpretation and the use of media. Rules are markers; they are not absolutes. Dare to risk. In the making of *Who Framed Roger Rabbit* , animation director Richard Williams told director Robert Zemeckis, "I bet we can violate every single rule of animation." It's this kind of thinking that exploits the trends of multimedia productions today. In commercial animation the revolution is here.

Computer imagery provides opportunities to create encounters. Concepts take on a life of their own. People experience events vicariously. New perceptions and understanding are gained. The human mind is a fantastic processor, collator, and synthesizer. A collage of media can challenge the mind. Computer-generated imagery, although two dimensional, can create many feats: compression or expansion of time, illusions of multidimensions, and many other illusions. Computer imagery when presented in brief segments plants seeds in the mind. Consequently, once the seed has been planted other less expensive media can be used to stimulate the mind to reexperience the computer imagery.

The Cost

Time is money. Your greatest savings come from good planning, especially when using computer graphics and animation. Don't just dash off to a production house with nothing more than an idea. Be sure computer imagery is needed. Know exactly what you want your audience to experience, think, or do. Identify your most important priority and create a modular format: one set of specific visuals with specific narration. Remember! You are the interpreter, storyteller, and expert on the subject. Don't assume the production house knows your subject. "Full" production houses have a staff of directors and writers but they don't come cheap. The more you can do, the more computer imagery you may be able to afford within your production budget. A story board is essential. Be sure to format every change that's essential to the imagery to be created. Have the accompanying narrative completed. Remember, pictures communicate. Leave something for the viewer to discover. Don't lead the viewers by the nose. When presenting your proposal to the production house know what alternative media images you'll want to use to stimulate a reexperience of the computer imagery. The alternative media images may already exist or may develop from the computer imagery.

Conclusion

Interpretive services are a dynamic art; it's open constantly to experimentation. Today's visual media technological feats provide exciting opportunities to create experiences for people. Developing these new blended mixed-media programs is challenging. When done well they open our world to new dimensions of understanding.

Reducing Vandalism through Interpretation

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Abstract

Vandalism is a confusing term. This paper gives a coherent framework for identifying its various manifestations and supplies data about causes and common occurrences. The function of interpretation in general, and in relation to vandalism-reduction in particular, is outlined. Numerous practical suggestions for prevention or reduction are supplied.

Introduction

Not everything that looks like vandalism is vandalism. One of the oldest writings on Inscription Rock in New Mexico is dated 1605, which was 15 years before the pilgrims landed at Plymouth Rock: "Paso por aqui el adelantado Don Juan de Onate del descubrimiento de la mar del sur a 16 de Abril de 1605," which translated means "Passed by here the Governor Don Juan de Onate, from the discovery of the Sea at the South the 16th of April 1605."

This is but one of several inscriptions frontier travelers and military personnel left on various rocks. Had we been the manager there, we might have called it vandalism. Instead we call it a cultural resource and have set the area aside as El Morro National Monument.

Here are some more examples. A large entrance sign for a campground in the Colville National Forest was damaged, not by vandals but by porcupines--which found an ingredient in the plywood to their liking. A fireplace in a national park campground has a large crack. It appears to have been vandalized, but it has simply been misused. Visitors to the park have been using it as a chopping block rather than as a fireplace, causing it to break.

Another example of ambiguity in vandalism is in Lewis and Clark Caverns State Park in Montana, whose main attraction is a limestone cave. The cave today appears to have been heavily vandalized, as numerous stalactites have been removed. This condition, however, came about when the cave was privately owned many years ago. It was the policy of the owner to give souvenirs to visitors, allowing them to take a stalactite home. A final example of apparent vandalism is in northern Michigan. People tried to pull a dry-land slide down to the water. By the time they got it into the water the slide was pulled into two pieces. I am sure that when the manager found it he or she assumed the slide had been vandalized.

How then do we identify vandalism? We often hear the term "depreciative behavior" when referring to vandalism. Let's examine the relationship between vandalism and depreciative behavior.

Depreciative Behavior

Depreciative behavior is any act that detracts from the social or physical environment. It can be broken down into three categories. One of these is nuisance acts, and examples would be the making of excessive noise in a campground after a certain hour at night, draining camper waste water on the ground, writing obscenities on walls, short-cutting trails, or allowing pets to run free in a park where they are required to be kept on a leash. Two other examples would be individuals riding motorcycles and other machines in a manner that annoys others, or people dumping their garbage in a park or forest simply because they don't want to pay the cost of garbage collection at home.

A second category of depreciative behavior is known as legal violations. These include violation of campground rules, such as camping in undesignated areas; feeding animals where prohibited; stealing park property or visitor possessions; or hauling stolen cars into a forest or park, stripping them, and leaving the hulks behind.

The third category of depreciative behavior is vandalism. The main contrast between this and the two previous categories is that vandalism often results in defacement or scars. This includes carving one's name or initials on a tree trunk, shooting signs, spray-painting graffiti on various structures, breaking windows, or performing any of dozens of other acts that destroy property.

All the foregoing, from the careless act of littering to the ignorant breaking of rules, need attention from interpreters, but the expensive and demoralizing acts of vandals are our concern here, as they threaten park programs and ruin budgets. Before interpretive specialists can become involved in vandalism control, they should know something about vandals and what motivates them.

The Causes of Vandalism

There is a lot of folklore about vandals and vandalism. The "typical vandal" appears to be an elusive concept, ranging from the child of deprived economic and social circumstances to the bored, idle, rich teen. Yet we all know of adult vandals. A report from Canada suggested six causes of vandalism (unranked):

- Social decay
- Inadequate parenting
- Lenient courts
- Boredom
- Peer pressure
- Developmental factors

Since we can't readily control or alleviate these factors, let's look at the established categories of vandalism.

Kinds of Vandalism

The different acts of vandalism can be categorized based on the motivation of the perpetrator. These follow Cohen's typology of vandalism. This motivational analysis includes six types of vandalism; probably the least damaging is playful vandalism. This is normally the outgrowth of a group play situation and accounts for a large percent of park vandalism. Incidents such as carving names on railings or playing mumblety-peg on a park picnic table are meant to be a way of having fun. The resulting damage, at least at first, is not intentional. Eventually some skill is required to see who can do the most damage. The fun becomes competitive, and the damage escalates. Examples include breaking windows or utility pole insulators.

Another example of playful vandalism would be the altering of words on street signs or park entrance signs by changing a few letters. An example is found in a Weyerhaeuser Company park where the darkening of the letters v and m in Harry V. Morgan Park, changed the name to Harry Organ Park, much to the enjoyment of local kids.

A second kind of vandalism is erosive vandalism. This may be the result of ignorance or disregard of park values. An example would be the continuous picking of wildflowers in parks. One person picking a few flowers doesn't do much damage, but with many people picking flowers an entire colony could be wiped out. Other damaging acts compounded by repetition include short-cutting trails, carving names on trees, and littering.

A third type of vandalism is tactical vandalism, a type that is premeditated and has two possible forms. One form is an attention-getting ploy, and can be carried out, for instance, by setting incendiary fires. The second form, to gain publicity for a special cause, is witnessed in the spray painting of slogans on walls. Another example is the spray painting of symbols or "territorial tags" on walls by gangs or individuals to designate territorial boundaries.

A fourth type is acquisitive vandalism, and consists of destroying property in the process of illegally obtaining money or other desired objects. Examples include looting coin boxes on telephones, soft drink, and candy machines or stealing fee collection boxes. Also included are thefts of park equipment such as park signs; identification labels; or any number of valuable items such as metal, tires, batteries, or other items having resale value. Other examples include removing planks or railings from walkways or bridges, stealing shrubbery for ornamental use at home, or stealing evergreens for Christmas trees.

A fifth type of vandalism is vindictive vandalism, which is, as the name suggests, motivated by revenge against an individual, organization, or simply the "system." Here vandalism is the outlet or release of emotions for someone smarting under actual or imagined unfair treatment. It's an opportunity to settle a grudge without resorting to personal violence. Reasons include being fired from a job, enduring job discrimination, receiving a traffic ticket, or being expelled from a park. The aggression is against personal property or property of the agency that offended the perpetrator. Equipment and buildings usually suffer.

Some Facts about Vandals

1) Vandalism is found in both urban and rural areas.
2) It's usually carried out by young people against "the establishment," but there are exceptions.
3) Destruction of public property is more common than destruction of private property.
4) Vandals seldom work alone.
5) Promiscuous shooting is on the increase.
6) Vandals strike during periods of low use, on weekends, and during the off-season, as well as after high school graduation or on certain holidays.
7) Vandals strike more heavily after athletic events.
8) Vandalism often starts as a prank that gets out of control.
9) Vandalism control costs a lot of money.
10) It's difficult to apprehend vandals; in fact, most are never apprehended.
11) Frustration contributes to vandalism.
12) State and local law enforcement people are too busy handling major crimes to deal effectively with vandalism.
13) Many people don't regard what they are doing as vandalism until it's brought to their attention.
14) Vandalistic behavior is part of the socialization process of young people.
15) Vandalism is here to stay and will never be eliminated.

What is Interpretation?

With this brief introduction to vandalism, now we come to interpretation, its objectives, and the role it could play in vandalism reduction. You may recall that interpretation has three objectives:

1) To assist visitors in developing a keener awareness, appreciation, and understanding of the area they are visiting.
2) To accomplish management goals in two ways. First, interpretation encourages thoughtful use, helping reinforce the idea that parks are special places requiring special behavior. Second, interpretation can be used to minimize human impact on the resource.
3) To promote public understanding of an agency's goals and objectives. Well-done interpretation enhances the image of the sponsoring agency.

We note that to carry out these objectives, interpretation uses a number of media. Some work better than others, and many kinds must be used. Some media have less impact on the resources, some are not easily accepted by visitors, some are too expensive, and some are too easily vandalized. Visitors' lengths of stay vary; some need orientation on arrival, and some want souvenirs. Visitor behavior varies greatly with individuals for reason of age, experience, income, education, disabilities, culture, distance from home, and familiarity with the area.

Finally, individual areas vary greatly. Some receive more visitors than others; some are awe inspiring, others ordinary; some are more vulnerable to visitor impact than others; and some have facilities that lend themselves to greater visitor protection, comfort, and satisfaction. And some are managed so poorly that they lead to visitor frustration.

The Interpretive Program

The media used in interpretation may be placed in two categories: personal or attended services, and nonpersonal or unattended services. In the first, the visitor comes into direct contact with the interpretive specialist. This is done by means of information duty, conducted activities, talks to groups, and living (historical) interpretation. In this instance the presence is felt, and there isn't much vandalism taking place.

The second category, nonpersonal services, is where the message is offered with substitutes for interpretive personnel. Examples include audio devices, written material (publications, signs, labels), self-guided walks and auto tours, exhibits, and specialized equipment such as automated slide programs and interactive video devices. Here the interpreter's role is to keep the equipment and programs up to date and working, but since employees usually aren't present, the unattended devices may become targets for vandals.

How Can Interpretation Reduce Vandalism?

Vandalism prevention is not a realistic goal; however, there are standard and acceptable methods for reducing vandalism that have proven successful. Most are beyond the jurisdiction of interpretive specialists, but interpreters should be aware of them.

1) High-quality durable materials in the construction of facilities discourage vandalism.
2) Employee presence serves as a deterrent to vandalism.
3) Increased visibility and surveillance during critical periods preempt traditional vandalism sprees.
4) Immediate maintenance of vandalized facilities prevents imitation.
5) Areas with entrance stations suffer less damage.
6) Entrance fees and the recording of license plate numbers and visitors' names have a dampening effect on vandalistic impulses.
7) A limited number of clear, reasonable regulations will seldom goad visitors into unacceptable behavior.
8) Low-profile law enforcement often is more productive than high-profile law enforcement.
9) Convictions for vandalism should be given publicity.
10) Incentive litter-control programs entertain, train, and preoccupy prevandals.
11) The interpretive staff should be part of a vandalism reduction team.

How does the interpreter fit into the vandalism-reducing picture? This is a question all interpreters should ask themselves. Are you still pushing bees and trees exclusively, or are you also on the management team? What are you doing to help solve the manager's problems? Perhaps you've never been asked. Perhaps it hasn't occurred to you that you should get involved.

Picnic-table carvers may well be in the male, 13-to-15-year-old category. Just how many 13-to-15-year-olds have you had on your walks or at your talks? Not many, you say. Then how do you reach them? Through off-site interpretation. If they don't come to you, go to them.

Suppose you have a poaching problem that takes place at 6 a.m. Arrange a wildlife-watching tour at the same time and place, and see if bringing people into the area resolves the poaching problem.

Presumably, there already is someone in your park doing something about vandalism--namely, prevention (the rangers) and repair (maintenance). It may be that they are burned out on trying to control vandalism, so ease into the situation, look around, and ask questions.

Tell the maintenance supervisor that you would like to see their repair cost figures for the last year, as well as the time and location of the vandalism. Ask the law enforcement people if they have records on juveniles apprehended in acts of vandalism. Tell them you need the information for your PIP (public information program) on vandalism.

Again, don't come on too strong. They might resent your efforts. Tell them that you were at an interpreter's meeting in San Diego, and you picked up some ideas that may assist them. If they don't buy this, then work through the manager. Remember, reducing vandalism is a team effort.

The vandal puts into practice in your park what he or she has learned about vandalism in schools and urban neighborhoods. Control, therefore, becomes a community effort. People outside your park generally will be apathetic towards the vandalism problem unless they have been hit personally. Usually it's because they don't know what to do about it. No one has taken responsibility for organizing people to take on the problem.

Try this approach:

1) Vandalism is a community responsibility, not just that of park authorities.
2) Each citizen must bear the cost.
3) The problem is becoming more serious.
4) Let's work together.
5) Push the public pride theme.

Here are some specifics:

- Develop a leadership posture if no one else is doing anything about vandalism. Get others involved.
- Organize community meetings to discuss the problem.
- Increase public education and awareness of the problem. Compile information and statistics on vandalism.

- Develop a Vandalism Alert bulletin with distribution to appropriate groups and media.
- Develop a slide or video program and a photo collection of damaged park property, with repair costs.
- Sponsor park awareness days with special attention given to students in local schools, particularly 7-to-15 year olds.
- Prepare radio, television, and newspaper articles on vandalism prevention.
- Create press releases on your cooperative community efforts in vandalism control.
- Write press releases dealing with the positive aspects of park management. Don't let the media create your image.
- Develop an off-site, off-season speakers' bureau to promote your anti-vandalism efforts.
- Watch for research dealing with the effectiveness of vandalism control methods. Keep accurate data yourself.
- Encourage restitution and repair rather than fines.
- Make parents responsible for the actions of their children. Working off a sentence has several redeeming effects.
- Make a personal commitment to work with apprehended vandals assigned to do restitution and repair work in the park.
- Push for heavier prosecution of vandals through appropriate channels. (Judges sometimes say parks are for people to have fun in and may not be sympathetic to stiffer sentences.)
- Offer visitors the opportunity to *Report Vandals Here.*
- Encourage use of channel nine (or another designated channel) on CB for VIP (Vandalism In Progress) reports. (Visitors with CBs can make such reports without fear of retaliation.)
- Ask local merchants to refuse to sell spray paint to juveniles.
- Keep maintenance people and rangers up to date on what you are doing in vandalism control. Let them know that your expertise is in public education, and you want to cooperate with them in reducing the carnage. Here are two examples:

    1) Ask the rangers if they have ever considered a campground host program, where free trailer space is offered to people in exchange for light maintenance and supervision of the facilities.
    2) Ask maintenance to build a locked box around the first ten feet of flagpole rope at the park entrance. Tell them a park in Montana tried this and they haven't lost a rope since the box was built.

- Develop reward systems for services rendered. Here are two examples:

    1) Follow the lead of the USDA Forest Service in using power in litter control. Coloring books are relatively inexpensive incentives; maybe you can think of other rewards for litter getters. Not only do you get a tidy park, you train kids to like it that way.

    2) Follow the example of California State Parks Conservation Awards--a shoulder patch in exchange for physical labor. Off-road vehicle

people are particularly interested in getting the patch and positive visibility. The hidden element is their indoctrination into park values. Hopefully, they'll pass this on to other recreationists.

- When all else fails, read the literature on vandalism.

Because of vandalism repair costs, interpretation may not be funded, so interpreters have every reason to exert themselves to effect a reduction in vandalism.

Bibliography

Harrison, Anne. 1982. "Problems: Vandalism and Depreciative Behavior." Chapter 25, *Interpreting the Environment* (2nd ed.), Grant W. Sharpe, editor. Wiley, New York.

Beaulieu, L. 1981. "Task Force on Vandalism: Province of Ontario." *Vandalism in Calgary.* Vandalism Prevention Task Force, City of Calgary.

Cohen, Stanley. 1973. "Property Destruction: Motives and Meanings." *Vandalism.* Colin Ward, editor. Van Nostrand Company. New York.

Sharpe, Grant W. 1982. "An Overview of Interpretation." Chapter 1, *Interpreting the Environment,* (2nd ed.), Grant W. Sharpe, editor. Wiley. New York.

Sharpe, Grant W., Charles H. Odegaard, and Wenonah F. Sharpe. Chapter 17, *Park Management.* Wiley. New York.

Gotta Move! We've Outgrown the House: A Discussion Forum on Interpretive Professionalism

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Abstract

Nudging interpreters toward the first manifestations of professionalism, Freeman Tilden defined interpretation and articulated a philosophy in 1957. And we've done virtually nothing to broaden the scope of our professionalism since! Thirty-two years, and what have we got to show for the maturation and growth of our profession? Too little--but, never too late. So, where do we start?

Interpreters seem to be a constant target of criticism for not "getting our act together." Occasionally we receive the criticism from "higher management," colleagues in other disciplines, academia, or other critics. More commonly we perceive it about ourselves; i.e. we are our own worst critics.

In truth, we are asked to master a wide variety of talents:

1) Resource subject knowledge
2) Communications skills
3) Agency philosophy
4) Management expertise

Opinions

For example, in *Interpreting the Environment,* Paul Risk opines that "... there is no correlation between the possession of a degree in natural sciences and the ability to communicate. If anything, there may be a negative correlation, and communication is the name of the game." Alston Chase, however, in his notorious *Playing God in Yellowstone,* seems to bemoan our abdication of the historic role as scientists and subject-matter experts. Commenting on Paul Risk's list of modern interpreter attributes, Chase says, "The roster of qualifications began to read like a charm-school manual. Interpreters must have 'sparkle', have 'enthusiasm', 'a sense of humor and perspective', 'articulateness', 'self confidence', 'warmth', 'poise', 'credibility', and a 'pleasant appearance and demeanor'."

Well, it seems everybody has an opinion about what we should do best. Can we simply do everything "best?" It seems to be all right for a park manager to not know everything about his/her resources; isn't that why we hire resource management specialists? And isn't it OK for a public information officer to be less than a wizard at management? After all he or she usually doesn't supervise much anyway. How about a scientist who's not the best presenter or speaker? Isn't that excusable because scientists are supposed to be preoccupied with data analysis, publications, and arcane jargon?

But, when interpreters fall short in one or more of these areas (and we always do) there are the inevitable "tsk, tsk's," and "See? More evidence that interpreters can't do their job." Lots of opinions on the profession and its execution.

Criteria for Professionalism

What we need are some facts! Some articulation which we have created of what we're supposed to do and how we're supposed to do it. Our "professionalism" has been too long in the hands or more accurately the opinions of others. And, one may argue, it's our own damned fault!

Perhaps we can't decide what we are, artists or administrators? Orators or editors? Personnelists or propagandists? Without settling some of these issues, can we even begin to "professionalize?" The term professionalism, itself, poses some problems. It's often treated as a cliche.´ Furthermore, to some it seems to be too elitist and may be too overworked.

We can begin by taking a look at some criteria or descriptors of professionalism which are offered here for consideration:

1) Articulated philosophy
2) Common terminology or vernacular
3) Standards of acceptable practice
4) Evaluating and monitoring to ensure quality
5) Statements of ethics and acceptable conduct
6) Skills improvement opportunities/requirements
7) Research and development
8) Intellectual/emotional contributions from practitioners
9) Shaping of external influences
10) Peer recognition and respect
11) Recognition and respect by other disciplines

How does interpretation stack up? Let's look at a few examples.

First, the good news.

1) Articulated philosophy: We do have an articulated philosophy, thanks to Tilden's *Interpreting Our Heritage*. And we certainly have remained

diligent in revisiting Tilden's definitions and six principles, always striving to improve or refine them. (So far no one has.)

8) Intellectual/emotional contributions from practitioners: Well, we are certainly an intellectual and emotional lot! And our newsletters and journals do reflect contributions of that sort. Furthermore, the positive response to the founding of the National Association of Interpretation also demonstrated our generosity to the common wealth.

Now, some not-so-good news.

2) Common terminology or vernacular: Can we all agree with some precision on what a "visitor center" is? Perhaps. Just what is a "visitor contact station" then? Are there distinctions between a roadside sign and a wayside exhibit which may make us better understood with other disciplines or even among each other? What about the differences between an interpretive "program" (a word with many meanings) versus an interpretive "episode?" It would seem there must be fundamental facility and activity definitions which could be developed to cross agency or organizational lines.

   Also rather basic, one would think, are common themes, goals, and objectives, yet we don't agree on what they are, if they should be written, nor how they should be used! Themes, goals, and objectives are terms which are often used interchangeably, and prepared with little regard for important distinctions, consistency from one management document to another, or comprehension by visitors. Many interpreters seem to believe that careful preparation of these elements is a lot of work that simply reduces creativity. The truth is that such preparation constitutes a little work which saves a lot of time in the long run.

   A thematic approach to interpretation means you have a reason for what you're doing, a general plan for what you want visitors to take home, a place to start, etc. Why then, is the preparation of themes, goals, and objectives so inconsistent and their application so uneven across our profession?

4) Evaluation and monitoring to ensure quality: The National Park Service's recently published *Interpretive Challenge* says: "Pervasive in its absence, quality assessment is the most notable and, as yet, unmet challenge to improving the effectiveness, efficiency, and reliability of interpretation."

   There can be no doubt that aggressive evaluation of programs can be expensive and/or time consuming, though not necessarily. At times it seems that some interpreters, planners, or designers don't want to know the effectiveness of their efforts if such knowledge would suggest accountability for results.

10) Peer recognition and respect: How charitable are we with the interpretive efforts of our peers? Is our criticism consistently constructive, calculated to improve the next try? One park staff person reviewing the above-mentioned *Interpretive Challenge* which offered an unsigned poem, given here in part:

I have not been touched
with the magic fairy wand.
I see here
I see hear
the solid, impersonal, strike of the typewriter key.
confusing the adjective (sic) "the"
with the noun love.
I see order, an order, The Order
of Interpretation
mixing life, death, and love
with studies, initiatives, coniveing (sic) task forces,
seeking leadership roles, and planning like Maggellon.

The author perhaps understood little about what the twenty interpreters who worked on the *Challenge* were striving to accomplish. Nevertheless, the comment seemed devoid of constructiveness, absent of any value in improving the usefulness of the plan. For the sake of our own credibility we must remain careful to distinguish between severe criticism and just plain bad criticism.

From these examples we can see that discussions are overdue regarding criteria or descriptors of interpretive professionalism. Readers are urged to look to other criteria on the list and consider for themselves how the broad discipline of interpretation "stacks up," and what improvements may be desirable.

More importantly, continuing discussions should also propose actions by the profession and its members to pursue the steady evolution or refinement of each of the agreed-upon criteria. Such discussions must occur in a creative environment, devoid of a fear of failure, a brainstorming climate. Such a climate should be fostered at professional meetings and continued at home with local staffs.

Summary

Interpretive responsibilities are ever increasing, becoming inflated. Communication skills are always being refined and polished. And technological spinoffs are thrust at us in confusing array.

Compared to doctors, lawyers, and Indian chiefs, interpreters ply a new trade. But, many of our newly developed responsibilities, skills, and technologies have, oddly, inhibited the development of professionalism. The house in which our professionalism resides was built on too small a foundation to begin with. It's time to move to a larger place and vital that we ensure the strength of the new foundation.

Interpretive themes, goals, and objectives may be an appropriate starting place. We can't agree on what these terms mean, and yet they are the most rudimentary component of planning and evaluating interpretive efforts. The National Association of Interpretation should draft, refine, and resolve definitions and a statement of the significance of themes, goals, and objectives in all interpretive operations. The same task force of the Association should also simultaneously explore the need for better understood vernacular within our profession as one gauge of and contributor to "professionalism."

There has been a recent resurgence of support for interpretation among many agencies and a blossoming of entrepreneurial spirit expanding commercial interpretive services. These and other developments in our discipline suggest that standing committees of the Association should be created which propose, monitor, and revise 1) standards of acceptable practice and 2) ethics and acceptable conduct.

Finally, we must continue to examine other indicators of "professionalism," consider how such indicators may be initiated or enhanced, and formulate appropriate recommendations to those in leadership roles, such as the Board of Directors for the National Association of Interpretation.

Obviously, the resources of this fledgling organization are limited. Task forces and standing committees are not the answer to all issues of interpretive professionalism, but our new Association can play a pivotal role in addressing them in an aggressive and systematic fashion. Is the membership ready to think, to work, to compromise--to mature?

Bibliography

Chase, Alston. 1986. *Playing God in Yellowstone*. New York: Harcourt Brace Jovanovich, Publishers.

Sharpe, Grant W. 1976. *Interpreting the Environment*. New York: John Wiley & Sons, Inc.

Tilden, Freeman. 1957. *Interpreting Our Heritage*. Chapel Hill: The University of North Carolina Press.

National Park Service. 1988. *The Interpretive Challenge*. Washington, D.C.

Nature's Colors: Natural Dyeing for All Ages

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Abstract

Natural dyes have become a popular topic that can be used for interpretive programming in a variety of settings for a variety of audiences in terms of age, program length, and degree of sophistication. Naturally dyed eggs provide an early spring topic that allows the interpreter to introduce parents and children alike to a new aspect of their world. Dyeing wool and other materials continues this process, which can be used to combine crafts with conservation, gardening, and imagination. Often lacking in surplus time and funding, the adaptability of natural dyes offers a change in otherwise routine programming. Simple techniques and variations are presented that you can use to develop your own program.

Introduction

Natural dyes are an intriguing topic that can be presented to groups of differing ages with only minor changes in techniques and materials. The topic seems at first to be complex, but with a basic understanding of the fundamental principles and a methodical approach, the possibilities are only limited by the participants' imagination and time. The conservation of natural materials and the mysteries of nature can be easily incorporated into a program while the participants are treated to a bit of magic.

The fundamental principles can be best described in terms of working with natural wool. Other applications, such as dyeing basket reed, cotton tee shirts, and hard-boiled eggs, can then be easily adapted to meet the special requirements of the audience and event. A word of warning should be given with any program involving edible products--all of the dyes and any other ingredients should be edible. Also, dye materials should be carefully chosen to exclude the possibility of contaminants such as lead from car exhaust in materials collected by roadsides.

We have presented hour-long programs to three- and four-year olds, afternoon workshops for children ages ten and above and adults, and a six-hour adult-only workshops at different sites with minimal changes to the program. The materials required are similar and the only things the facilities require are a source of heat (hot plate, stove, or fire) and water. The dye materials can be collected in advance in most cases and preserved by freezing or drying until needed. The wool should be natural and untreated. Synthetic fibers are not easily dyed and should be avoided. We have used cotton yarn and muslin with limited success, but 100 percent cotton tee shirts are dyed easily with excellent results. Identification of ownership or which treatments have been applied will require a permanent marking system with either a waterproof pen or series of knots.

The Preliminaries

A simple hour-long dye workshop requires the pretreatment of the wool in terms of:

1) Packaging the wool in miniature skeins if samples are to be given to all of the participants to take home
2) Washing the wool with a gentle soap such as Ivory liquid
3) Applying a mordant

Mordanting facilitates the dye-to-wool bonding using chemicals. This is probably best done at home one evening when you are not rushed for time. It can be done well in advance and the wool may be dried and stored until the workshop is held. Common mordants include alum (potassium aluminum sulfate), copper (copper sulfate), and iron (ferrous sulfate). Other possibilities are chrome (potassium dichromate) or tin (stannous chloride), but these are more dangerous to use. Colonists used copper pots, iron pots, or rusty nails to provide the chemicals needed to mordant their wool. During mordanting, care should always be taken to deal with the chemicals and fumes in a well-ventilated place.

Dye Materials

Dye materials can be collected as part of a longer program or participants can be asked to bring common kitchen "leftovers" such as yellow or red onion skins, purple cabbage, or carrot greens. It's usually advisable to have enough back-up dye material to do several different dye pots just in case insufficient dye materials are available from the participants. Grocery stores always welcome the opportunity to help their local nature center by donating throw aways when you explain the project. You will leave them laughing until the final proof is brought back after a successful workshop.

The Dyebath

Dyebaths are usually prepared by adding enough water to cover the dye material and soaking the material. Overnight soaking may be enough to extract some of the dye from the raw material, but the addition of heat will ensure a more successful and concentrated dyebath. As the dyebath becomes concentrated, the liquid can be drained off and additional water added to continue the extraction process. If the dyebath is made in advance of the workshop, it can be strained and frozen in small containers allowing for expansion during freezing. Label carefully as a marigold-flower dyebath closely resembles a coreopsis-flower dyebath when they are frozen. Plastic and glass containers should not be filled completely to ensure that cracking doesn't occur. Sudden temperature changes are also important considerations.

The Program

Depending on the age group, the time allowed for the program, and the experience of the group, an excellent movie to begin the program with, *Nature's Colors*, is available from the Brooklyn Botanical Gardens. This movie is available to us through our local public library and presents in beautiful color the entire process. Bring dyed samples with you to show your group--then they can compare previous results with their results. Mayapple leaves will produce different colors depending on how mature the plant was when the leaves were harvested. In some cases, such as purple cabbage, heat will destroy the desired color very quickly and result in a disappointing brown color. Early willow leaves have produced a beautiful shade of pink. Participation is very important and will give your group a new way of looking at the world around them--what color will the plant they collected make? Nature is tricky and what you see is not necessarily what you will get.

Dyebaths can become complex when you use an ammonia fermentation process (the American Indians used fermented urine) or with an oxidation-reduction process, such as an indigo dyebath. Making an indigo dyebath will be well worth the effort. The wool appears green when it is taken out of the dyebath. After swinging the wool in the air to increase the oxidation process, the wool then turns blue for no apparent reason. Upon a second and third immersion in the dyebath, the wool will again be transformed from green to blue, getting darker every time.

Conclusion

Variations on the hour-long program can be used to do dyeing of hard-boiled eggs for Easter, tie-dyeing projects for Conservation Clubs, and a day-long foray to harvest and experiment with color. Even in a balmy, cold autumn day, rain did not deter the participants' enthusiasm when some hot tea was available. The rustic setting in a field by a make-shift fire pit seemed to add atmosphere to the gathering and the 30 different colors that resulted were reward enough for the participants to return for a spring dye session. A visiting delegation from Turkey presented an interesting twist to one dye workshop sponsored by the Textile Museum in Washington, D.C. Many of the rules, such as gradual temperature changes for the natural wool, were ignored and the results were amazing. Maybe in this case, abuse helps ensure the permanence of the color as the ageless Turkish rugs seem to testify. Local materials and techniques should always be investigated to provide further variations on the dyeing process.

Most of all, let your imagination lead the way and learn to look at nature from a different point of view!

Bibliography

Bliss, Anne. 1978. *Weeds: A Guide for Dyers*. Juniper House. Boulder, Colorado.

Buchanan, Rita. 1987. *A Weaver's Garden*. Interweave Press, Inc. Loveland, Colorado.

Grae, Ida. 1974. *Nature's Colors: Dyes from Plants*. Macmillan Publishing Company, Inc. New York.

The "Expert" Syndrome: Taking the Fear Out of Teaching

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Abstract

The traditional teaching dynamic is to have the teacher talk about a subject and a learner listen. This puts a great deal of emphasis on the teacher as an expert and the main actor in the educational experience. This creates pressure on the teacher to perform and be an expert and tends to make the learner inactive and passive. We suggest restructuring the educational experience so that both teacher and learner are exploring the subject together. This takes factual and performance pressure off the teacher and lets the learner take an active role in the learning experience. This restructuring of the educational experience involves both teacher and students doing four things: observing, questioning, sharing, and getting factual input together.

Stress in Teaching

Do you feel that you have to be an expert in a certain field before you teach others about it? Are you afraid that someone will ask you a question that you can't answer? This is a common feeling among interpreters and teachers and it makes teaching a stressful experience.

The Traditional Teaching Situation

Traditional educational experiences involve the learner being taught or given information by the teacher. This presupposes ignorance on the part of the learner and wisdom being transferred by the teacher. It places responsibility for the learning all on the shoulders of the teacher. It also places the teacher in the role of authority or expert. Given the nature of the teaching situations facing today's naturalists--where it's not always possible to be an expert in a field before you are asked to teach--these expectations place pressure on the naturalist/interpreter and also have subtle ramifications on what the learner experiences.

The Expert Syndrome

What does it mean to be an expert? How much knowledge of a subject is it necessary to have before an interpreter can teach? These are questions that worry interpreters and often lead to ineffective teaching. The interpreters spend too much time trying to memorize facts or become an expert on the subject, a task that is often impossible. They worry that they will not have the correct answer when asked a question and that they will look stupid and lose prestige in the eyes of the learner. While it's expected that the interpreter will have some knowledge of a subject area, the quality of the educational experience is often determined by other factors, namely the attitudes and expectations of both teacher and learner and the way in which the learning situation is designed.

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Creating a Better Teaching Environment

By gaining a new conceptual definition of the learning situation and the role of the participants, the teacher can experience more effective and worry free teaching.

The learning situation is a joint undertaking between the teacher and the learner in which the goal of the teacher is to create a relationship between the learner and the subject. In this view of learning, the teacher is a facilitator rather than an ultimate authority figure. The learner is expected to be an active participant in establishing a relationship between him or herself and the subject.

The teacher's job is to design learning situations where the learner can be active from the start. This model looks at learners then, not as "sheep" to be lead by the teacher, but as active explorers who already possess the necessary competence and skills to connect with the subject matter.

The four basic elements for a learning situation are:

1) Observing
2) Questioning
3) Sharing with others
4) Factual input

Summary

Typical teaching situations overemphasize factual input from the teacher, thereby creating the "expert" syndrome. The teacher can carefully design learning experiences that bring learner and subject together by having the learners make their own observations, develop their curiosity for the subject, and have an opportunity to share what they learned with others.

Dive Travel in Hawaii and Implications for Commercial Interpretation

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Abstract

This paper will review the literature regarding dive travel and diver preferences for underwater environments, as well as attempts to interpret the aquatic environment for divers. It will then examine Hawaii's dive travel market, the diving and snorkeling industry, and areas used for dive sites. Finally, implications of dive travel will be discussed in terms of potential for commercial interpretation. Recommendations will be provided for extension activities aimed at the commercial dive/snorkel charter industry--including training programs, extension publications, networking, and visitor information programs.

Introduction...Recreational Diving is a Growing Sport

Recreational diving, in the form of snorkeling and scuba diving, is now one of the most popular activities for tourists traveling to the tropics and subtropics. Even in places far removed from the ocean, divers enjoy their sport in quarries, lakes, streams, ice ponds, kelp beds, and underwater caves. Attractions vary infinitely, including wrecks, coral reefs, "walls," "blue holes," and sleeping sharks.

Although the dive sites and destinations are extremely diverse, the divers themselves seem to have much in common. They are generally well educated, young, and financially secure (Skin Diver, 1985). The sport is also male dominated, although there are increasing numbers of women becoming scuba divers. The diverse interests and skill levels of divers present a major challenge to resource managers and interpreters in accommodating their varied recreational needs in underwater environments.

Diving Tourism

Dive travel is a worldwide phenomenon. Major diving destinations such as legendary Truk Lagoon are banking on dive travel as a primary means of developing tourism (PATA, 1977). Places such as the Caymans, Bonaire, and U.S. Virgin Islands depend on dive travel to support their tourism industries which have been promoted as "sun, sea, and surf" destinations. Much of their diving tourists come from the U.S. East Coast and Gulf states where inexpensive air fares to the Caribbean are available.

Dive travel is a small but significant part of international and domestic travel in certain regions. The popular "sunspot destinations" in the global sunbelt near the Equator include the Mediterranean, Pacific Islands, Gulf of Mexico/Caribbean, and Florida (Matthews, 1978). In the Pacific, tourism has been growing at a phenomenal rate. For example, Hawaii's arrivals grew from 243,000 to over five-million dollars in 1986;

visitor expenditures now exceed four-billion dollars annually, making tourism its most important industry. Diving is an important aspect of tourism in that a significant number of tourists engage in scuba diving or snorkeling. A survey of 23 dive shops in Hawaii (out of 44 shops) revealed that they grossed nearly seven-million dollars in 1982 (Van Poollen, 1983). Today, there are about 70 such dive shops statewide which grossed over 20-million dollars in 1986 (Tabata, in press).

The U.S. alone is estimated to have about 85 percent of the world's diving travelers (PATA, 1977). There are about 1.9 million people with recreational diving skills in the U.S., of which 474,000 are active; of the 1.9 million, most live along the West Coast, Gulf of Mexico, and East Coast (U.S. Dept of Commerce, 1975). According to a recent Gallop Poll, about 5 percent of the U.S. population (about 11.5 million) is interested in scuba diving, about five times the estimated diver population in 1980; 56 percent of divers indicated they would like to increase their participation (PADI, 1981). In addition, about 7 percent of U.S. travelers enjoy skin diving, scuba diving, or snorkeling (TTCI, 1981). Another potential source of dive travelers for Hawaii is Canada, from where thousands already dive in the Caribbean.

Japanese divers are also of special interest due to their extensive travel in the Pacific and relatively high personal expenditures. Nearly 20 percent of Hawaii's visitors come from Japan. Perusal of Japanese diving magazines reveals numerous dive shops, dive clubs, and tours to exotic places such as Truk, Palau, Philippines, and the Red Sea. One study of Japanese visitors in Guam found that 9 percent of respondents wanted to see "underwater trails for snorkeling" developed as attractions (Mak and Miklius, 1977).

In summary, diving represents a recreational activity which is being enjoyed by more travelers as part of a total vacation experience. A wide variety of people participate in diving--ranging from nonswimming novices who try snorkeling for the first time to experienced open-water scuba divers seeking new challenges.

What Kinds of Experiences Do Divers Seek?

The literature on diver preferences for various environmental attributes is very limited. Skin Diver (1985) readership surveys show that divers are attracted by features such as reefs, wrecks, lobsters, abalones, shells, walls, "drifts," and caves. In a Great Lakes area study, Somers (1979) found that nearly 40 percent of respondents enjoyed coral reef diving; they also enjoyed wrecks, underwater photography, ice diving, spearfishing, treasure hunting, and cave diving. Another study by Holecek and Lothrop (1980) suggests that divers with special interests, such as wreck diving, are more willing to travel farther to enjoy their sport. A recent New Zealand study (New Zealand, 1984) is one of the few which begins to identify diver preferences for environmental features. Matheusik (1983) provides the best analysis of diver preferences. Of 36 resource attributes examined, seven were found to be reliable indicators:

> "For the resource setting scales, both populations of divers on the average placed more importance on good water quality, natural geological formations, diversity of marine life, and safe and easy access than they did on low dive-trip costs, boat facilities, and other services. Among the four most preferred

resource setting attributes, good water quality had the highest mean for Ontario divers, while diversity of marine life had the highest mean for British Columbia divers."

Finally, O'Reilly (1982) provides some insights into dive-site preferences among recreational divers. Of 24 listed attributes, the five most frequently mentioned were expected clarity, marine life/lots of fish, cost, accessibility, and underwater scenery.

In summary, the study of environmental preferences seems to be a new realm for geographers. More specifically, studies of divers' environmental preferences are even more limited. Because of the growing recreational diving industry, particularly the dive tours sector, it will be increasingly important to better understand how dive operators select their sites and how our marine environment can be better managed for this purpose.

Interpreting the Marine Environment

Sharpe (1988), Veverka and Poneleit (1982), Robinson (1976) and others have indicated the value of interpretation for divers and snorkelers, especially in " marine park" settings. In marine parks, interpretation should be an integral part of resource management. Through effective interpretation, the diver can better appreciate the unique natural history of an area, as well as be more aware of rules, safety concerns, and appropriate behavior. In areas such as the Great Barrier Reef, U.S. Virgin Islands, and U.S. National Marine Sanctuaries, interpretation is provided to visitors in a variety of ways: pamphlets, self-guided underwater trails, glass-bottom boats, and visitor centers.

Today, tourists can even experience the marine environment without donning scuba tanks. Commercial operations such as Atlantis Submarines, based in Canada, offer underwater tours. At tourist destinations such as the Monterey Bay Aquarium, high-tech exhibit techniques help bring the ocean closer to home for the less adventurous. Undoubtedly, these experiences will encourage more people to try snorkeling and scuba diving.

Commercial dive operators, who provide guided tours in areas not managed as marine parks, have a unique opportunity to interpret the marine environment and, thereby, help their customers better enjoy their dive experience. Through interpretation, dive operators can help divers appreciate the marine environment and to encourage their involvement in helping to protect it.

Hawaii's Dive Travel Industry

As of 1987, there were over 50 dive operators and shops in the state (Tabata, in press). Collectively, they grossed over 20-million dollars in 1986, with Maui operators accounting for more than half of the state total. Half of the operations interviewed were less than five years old--indicating a relatively young industry. Neighbor-island operators tended to run more dive tours than Oahu operators who provided more scuba instruction and retail sales; also, neighbor island operators tended to offer more boat dive tours than Oahu operators. In 1986, interviewed operations sold 250,000 tours of which 128,000 were snorkeling tours and 68,000 were tours for certified divers.

Need for Interpretation in the Dive Industry

Dive and snorkel tours offer a great interpretive opportunity, especially while customers are enroute to a site aboard a boat. On many tours in Hawaii, customers are taken along spectacular shorelines with fascinating geological, historical, and natural history "stories" waiting to be revealed. Sea cliffs, plunging waterfalls, dolphins and whales, ancient villages and battlefields, formerly inhabited valleys, and teeming reef life all await an effective tour guide to bring the scenery to life.

Interpretation would help to "open the eyes" of divers in a new environment. Interpretation would also help divers better understand human impacts and appropriate behavior. This is particularly true in areas which are not presently managed as marine parks. In Hawaii, most of the dive sites used by commercial operators are outside of designated marine parks. A few sites such as Molokini Crater off of Maui, Hanauma Bay and Shark's Cove on Oahu, and Hulopo'e Bay on Lana'i are popular destinations, but there are dozens of other special sites nurtured by individual dive operations. For example, it's common for an operator to feed and tame a "pet eel" and reef fishes as an attraction.

At certain sites, conflicts arise as tropical fish exporters collect colorful specimens for the aquarium trade, or stony coral harvesters remove live coral for souvenirs. Although dive operators generally discourage their customers from collecting or removing anything, others may collect urchins, shells, or corals to take home. Anchor damage at popular dive sites is another great concern among operators.

Effective interpretation on dive tours could sensitize customers about the deleterious effects of touching live corals, disturbing marine life, or collecting specimens. Dive operators could also play a key role in environmental education by offering resident school children opportunities to experience the underwater environment. This would help develop awareness and a sense of stewardship among residents.

Role of Extension Services

The University of Hawaii Sea Grant Extension Service has been working closely with dive operators to develop the industry and to resolve concerns such as reef fish collecting and anchor damage. In cooperation with a statewide association of dive shops, Sea Grant conducted a survey of dive operators to develop baseline information on the industry. We also worked with University engineers, state agencies, and dive operators to adapt a Florida design for temporary moorings at dive sites. The "Hawaiian Eyebolt" will reduce anchor damage by offering a convenient alternative. Sea Grant plans to work with dive operators on training programs to develop interpretive skills. We would also like to help operators network more effectively with resource materials and people in Hawaii and elsewhere through involvement in efforts like the University's "Interpret Hawaii" vocational training program and the National Association of Interpretation's Interpretation and Tourism Industry Council.

Conclusion

The marine environment represents the last major frontier remaining on Earth. With the development of snorkeling and scuba diving equipment, this environment has become increasingly accessible. Marine parks, commercial submarine tours, and scuba and snorkel tours have made it even easier for the average tourist to enjoy the underwater environment. With increasing numbers of users, especially at popular sites, effective management and interpretation must be instituted to protect fragile resources and ensure long-term enjoyment by the public.

Bibliography

Holecek, D.F. and S.J. Lothrop. 1980. *Shipwreck vs. Nonshipwreck Scuba Divers: Characteristics, Behavior, and Expenditure Patterns.* Michigan Sea Grant Program. Publication MICHI-SG-80-205. Ann Arbor.

Mak, J. and W. Miklius. 1977. *Guam's Visitor Industry: An Economic Assessment.* Prepared for Economic Planning Division, Bureau of Planning, Government of Guam. Agana.

Matheusik, M.E. 1983. *Sport Divers and Underwater Parks: A Market Segmentation Analysis.* M.S. thesis, Texas A&M University. College Station.

Matthews, H.G. 1978. *International Tourism: A Political and Social Analysis.* Cambridge: Schenkman.

New Zealand Dept. of Lands and Survey. 1984. *The Cape Rodney to Okakari Point Marine Reserve Visitor Survey, 1983-1984.* Prepared for the Cape Rodney to Okakari Point Marine Reserve Management Committee. Auckland.

O'Reilly, M.B. 1982. *Sport Diving in Texas: A Study of Participants, Their Activity, and Means of Introduction.* M.S. thesis, Texas A&M University. College Station.

Pacific Area Travel Association (PATA). 1977. *Truk: A Study of Tourism Development.* PATA. San Francisco.

Professional Association of Dive Instructors (PADI). 1981. *The Retail Dive Store: Management and Operation.*

Robinson, A.H. 1976. *Recreation, Interpretation, and Environmental Education in Marine Parks: Concepts, Planning, Techniques, and Future Direction.* Working Paper No. 4 in An International Conference on Marine Parks and Reserves: Papers and Proceedings. Tokyo, Japan, 12-14 May 1975. IUCN Publications New Series No. 37. Switzerland.

Sharpe, G. 1988. *Interpreting Marine Environments. Waterfront Revitalization for Smaller Communities.* Robert Goodwin, editor. Proceedings of a Conference, April 23-24, 1987, Ocean Shores, Washington. University of Washington, Seattle (WSG-WO 88-1).

Skin Diver. 1985. *Skin Diver Magazine 1985 Subscriber Survey*. Petersen Publishing. Los Angeles.

Somers, L.H. 1979. *Profile of a Great Lakes Diver.* Michigan Sea Grant Reprint MICHI-SG-79-301.

Tabata, R.S. In press. *The Dive Industry in Hawaii.* University of Hawaii Sea Grant College Program. Honolulu.

Travel and Tourism Consultants International (TTCI). 1981. *Travel Market Yearbook 1981.* New York.

U.S. Dept. of Commerce, National Oceanic and Atmospheric Administration. 1975. *An Analysis of the Civilian Diving Population of the United States.* Washington, D.C.

Van Poollen, H.W. 1983. *Recreational Scuba Diving Industry Survey and Business Analysis, State of Hawaii, 1982.* Working Paper No. 52. University of Hawaii Sea Grant College Program. Honolulu.

Veverka, J.A. and S.A. Poneleit. 1982. Interpretation as a Management Tool for Underwater Parks. *Aquatic Park Management: Symposium Proceedings.* Proceedings of Symposium on Underwater Park Management, Michigan State University, December 15-16, 1980. E.T. Smiler and D.F. Holecek, editors. Michigan Sea Grant (MICHU-SG-82-900). May.

Implications of an Agency Signing Program

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Abstract

Signs are one of the most important interpretive media we use for communicating with park visitors. Signing's appearance and message have a great deal to do with the impressions visitors form of an area, park, or an agency. First impressions, in turn, affect how the visitor behaves during his or her visit. Poor-looking signs can result in inappropriate visitor behavior.

Introduction

First impressions of an agency, park, or program are easily made by individual members of the visiting public. These first impressions are made in many ways. For example, visitors form opinions of an agency from its representatives they deal with, from the appearance of a park, or the quality of a presentation made by a park employee. Visitors also form an impression of an agency or park through the image that the agency presents to the public.

Making Mistakes in Signage

One of the first things we are taught as students of interpretation is the importance of the appearance of the presenter. The same is true for the appearance of the recreation area or park when a visitor enters it. The interpreter receives no respect from the audience if there is something improper or distracting about his or her appearance. A recreation area or park is no different. Many times, visitors' first impressions set the tone of the entire visit.

For many years, the U. S. Army Corps of Engineers has operated under a decentralized mode of operation, meaning that there is very little central control downward from the Headquarters level. This has led to differing ideas on how certain park management issues should be handled. Under a decentralized mode of operation, the major decisions are made at the local level. For the Corps sign program, this has led to very different ideas on how our lake projects are signed.

In a study that Headquarters conducted, we found that the messages on 3,500 different signs could be boiled down to 36 standard messages. Many of these messages were trying to communicate the same ideas.

In the State of Kansas alone, there are five different Corps districts which have management responsibilities within the state boundaries each giving different messages. To the visiting public, this sometimes meant total confusion. Things at one lake were marked one way and things at the other lakes were marked differently. No wonder the public visiting our lakes was confused and didn't understand the rules for use of the facilities.

Our system of allowing major decisions to be made locally was costing us a lot of money, creating duplication of effort, and totally confusing the visiting public. In 1981, the Corps decided that something must be done to solve these problems. That year we began work on our Sign Standards Program. In the six years that followed, the Corps has developed a new Sign Standards Manual. It has also developed some ways of cutting costs which primarily result from economies of scale and has seen positive responses from the visiting public.

Developing Signage Standards

First of all, the Corps has developed a standard for all signs. The manual specifies how and where they will be used. The idea here is that a simple look is better. There's only one message on each sign, thus doing away with the cluttered look. While the signs all look pretty much the same, there is flexibility built into the program to allow for custom legends if the local manager so desires. However, custom signs are more expensive. We felt that by developing standard sign designs, the visiting public would begin to recognize who manages the Corps lakes. They would also begin to change the way they treat these public lands and practice better safety habits when using Corps lakes and facilities because of the clearer information being provided to them.

Conclusion

The most important benefit of the Corps Sign Standards Program is that we now have a national standard for safety signing. We feel that this standard will lead to safer and more responsible use of facilities and will result in fewer incidents of property damage, personal injury, and accidental death.

The plan is for the Corps to phase in these new signs over the next few years. We hope the end result will be better communication with the visiting public. We also hope the program will result in safer public use, lowered expenditures for signs, and better relations with the public as a whole.

Desktop Publishing at a Nature Center

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Abstract

Becoming computerized is a step which an increasing number of interpretive organizations are taking. Beaver Lake Nature Center entered the world of desktop publishing in the summer of 1987, after researching the topic for more than a year and a half. We'll share with you the outcome of our research on the various types of hardware and software, as well as our method for obtaining the necessary funding.

Becoming Computerized

Beaver Lake Nature Center first considered becoming computerized three years ago. At that time the term "desktop publishing" was just being coined. The idea of a nature center purchasing a computer seemed to many as opposite of our goals. After all wasn't a nature center supposed to be a refuge from our technological society? But our original motive in taking this plunge was to become better organized, so we could better serve our public.

Initially we researched the IBM-PC and its compatibles attending various seminars on hardware and software. We finally proposed to the County's Data Processing Department (Beaver Lake Nature Center is a county park) a request for two IBM compatibles and one near-letter-quality printer. At that time the only computers in the Parks Department were two PCs both donated by Friends support organizations; the Parks Department had never bought a computer. The County's Data Processing Department wanted to have a centralized system, and therefore they would choose what type of system we would have, and when we would receive it. They had no concept at that time of why a nature center needed computerization, and it was difficult to sell them on the idea, so our proposal was rejected. Our second potential funding source was the Friends of Beaver Lake, our volunteer organization, but by now we had heard of desktop publishing. We decided to put our proposal on hold, and research this new concept.

Once again we were attending seminars and private demonstrations; this time on desktop publishing. We saw it on IBM, Hewlett-Packard, and Apple Macintosh systems. The whole concept was amazing. All the software programs are designed with the same basic layout. Menus (the different options the program offers; similar to a restaurant menu offering different entrees) are set up similarly, thereby decreasing the amount of learning time for each new program.

With desktop publishing and Postscript, publications could be produced that were of a much higher quality and at lower cost than before.1 Though typically synonymous with the development and production of publications, desktop publishing also offers all word processing functions and database software.

At the time we chose our system, only the Macintosh was able to use a Postscript laser printer. Postscript and the fact that the Macintosh software was "friendlier" to a novice user (the majority of our staff had no computer experience), and more capable of true desktop publishing, were the reasons we chose the Macintosh.

We approached the Friends of Beaver Lake with our new computer proposal. This proposal consisted of two Macintosh SEs, each with a 20 MB hard disk, the Apple Laser Writer Plus, and four software packages: Microsoft Word, for word processing; Ready, Set, Go!, a page layout program; Filemaker Plus for databases, and a graphics program entitled Cricket Draw.

At first it was difficult to sell the idea to the Friends. Protocol prevented us from initially addressing the general members meeting with our request; instead we had to first approach the board members.

Legitimate concerns arose from the board members. Mainly, they felt that purchasing a computer was not a function of the Friends, but of the county. When our proposal was finally introduced at a general members meeting, however, it was approved by a wide margin. On August 7, 1987 our new system was installed.

Our New Macintosh System

In one year's time, the Macintosh has become indispensable. The most dramatic changes in both appearance and production methods have been seen in *Beaver Tales*, our quarterly newsletter. The biggest advantage of desktop publishing is the flexibility and creativity in design that this system allows. It permits you to try out ideas in minutes or seconds to get a more satisfactory result, where previously time and resources would not have allowed this kind of artistic freedom. What would have taken some erasing, a new sheet of presstype, or a different border tape, now requires just a press of the mouse button.

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1. Postscript is a page-description language. The computer's screen description is translated into Postscript, where the processor inside the laser printer interprets it to create a 300-dots-per-inch (dpi) bit-mapped image (a dot pattern) for the page. The final printout matches the screen data as closely as possible, thus the term WYSIWYG (pronounced wizzy-wig) or "What you see, is what you get." With 300-dpi resolution and a wide variety of type styles and sizes, Postscript laser printers can approach the quality of typesetting.

In the past the copy for the newsletter was typed on a 12-year-old, finicky IBM Selectric typewriter. Any changes required retyping and rubber cementing tiny pieces into place. Now, the Center's secretary types the copy in Microsoft Word which is then put into Ready, Set, Go! where it can be altered to fit the *Beaver Tales* format. Editing and corrections can be made easily, and piecing things together is no longer necessary. Headlines had previously been either presstype or typeset. Typeset copy hasn't been employed since the arrival of the "Mac." This has been a savings of both time (the typesetter is a 20-minute trip into town) and money.

The paste-up stage of *Beaver Tales* has also been streamlined. No longer does it require assembling various blocks of copy, headlines, and decorative elements (borders, shading film, etc.) and gluing (or waxing) them into place on the mechanical board. Now, each page of the newsletter is composed on the computer screen and in most cases it's affixed in one sheet to the board. The time needed for this stage of production has been significantly reduced.

Illustrations are generally not created with the computer. The Cricket Draw program has been used for generating maps, graphs, and drawings that are graphic or geometric in style. In a nature-oriented publication such as *Beaver Tales*, bit-mapped drawings (original or clip art) seems less satisfactory aesthetically than traditionally created illustrations. These can be sized with a photo copier or stat camera and then placed in a prearranged space in the layout. This combination of electronic and traditional design has worked out well for our newsletter.

The response from our readership concerning the changes to *Beaver Tales* has been very positive. They aren't always quite sure what we've done to it, but they comment that it's easier to read. There also seems to be more feedback on the articles, giving the perception that the issues are being read more closely. This is really the bottom line of computer use--it helps communicate more effectively. We are continually striving to attain the visual appeal that will make articles and stories even more inviting to the reader.

Another major change in *Beaver Tales* has been in the method of generating the mailing labels. Instead of keeping subscribers' names and addresses on index cards, this information and the date of their first and last issue, is entered in Filemaker Plus, our database program. This program permits us to sort and/or access any of the individual variables. Now prior to printing the labels we sort out the subscribers that will need a renewal form.

We also use Filemaker to keep track of our volunteers' hours. We have created a file that allows for mailing labels and weekly updates of volunteer hours. This information is then used for volunteer incentives and grant purposes.

Eventually we will place our course and program registrations and the associated accounting on the computer. But with the limited amount of free time available on our two Macintosh SEs, this would not be possible without an additional Mac. For our present needs the Mac is the perfect system. And with its expandability and the wide range of available software, we feel it will continue to meet our needs for a long time to come.

What Direction Interpretation?
Results of the 1987 Interpreter's Workshop Nominal Group Session

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Abstract

The early months of operation of any new organization (in this case, an organization to guide and facilitate interaction and exchange of ideas between interpretive professionals across the country) is an appropriate time to take stock of where we are and where we're going, and to benchmark our status and analyze the trends, both internal and external to the profession, that influence our actions.

As part of a larger national study on the status and trends in the field of interpretation, 14 interpretive professionals (practitioners, academicians, association officers, and federal agency representatives) worked through a modified nominal group process during the 1987 St. Louis National Interpreter's Workshop. They identified and prioritized current trends in interpretation as they will affect future planning and implementing of interpretive services.

Results indicated major changes in the following areas: funding strategies and providers of interpretive services, roles of interpretation and program emphases, techniques, demographics of visitors/users, and places where programs are offered.

These changes are not without challenge or controversy. However, it's critical to understand what and how various factors influence the direction of our profession so that we can be proactive rather than reactive in planning for the future.

Introduction...We're Really Still a Child

Interpretation is still a relatively young profession...relative to bankers, lawyers, sailors, and scientists. It is particularly young under the label of "interpretation." As does any young child (or organization), the field is continually striving to grow, to learn, to establish a strong identity, and build esteem for itself. When the identification label is unclear to others, we use other more well-known words to help identify who we are. Some of these words traditionally have been educating, inspiring, teaching, revealing, provoking, creating, communicating, and enhancing visitor experiences.

Generally, interpreters themselves believe they have a clear image (or at least an innate feeling for) who they are, what they do, and what their values are. After all, they have good example (even their own "bible") in people like Enos Mills, Freeman Tilden, and John Muir. However, this reassuring certainty may not be as real as some might imagine. Because the field is still youthful and growing, and because the world within which we live and the people with whom interpreters work are constantly changing, there is a need to match the work to the needs and the constraints. This doesn't mean forsaking any philosophical foundation or mission. It does however, mean regularly stepping back to assess and analyze what we are doing, and to plan where we are going. The recent merger of two national interpretive organizations to form the National Association of Interpreters (NAI) is a shining example.

For years members of the two organizations assumed that their missions and people were substantially different from each other. However, the premerger marketing study revealed many more similarities than differences. Together, members of the consolidation team for the newly chartered National Association of Interpreters worked together to dissolve barriers, set common goals, and chart a future course of action through smooth transition of the organizations. As part of the process, they developed a definition of interpretation, describing it as a process, "the art of revealing meanings and relationships in natural, cultural, and recreational resources" (AIN/WIA Consolidation Committee 1987).

Merging is Like Opening a New Door to Opportunity

The merger provided the opportunity and impetus for an exciting national workshop, held November 1988 in St. Louis. The workshop enabled previously estranged interpreters to meet face to face, to exchange ideas, and to reaffirm the values and philosophies that tie them together. It also provided an opportunity to step back, to assess, and to analyze where the field is and where it's going. This is particularly critical at this time, when a recent wane in interest and support for interpretation in many sectors seemed to some to be threatening the solidity of the profession.

By the late 1970s and early 1980s, the environmental fervor of the 1960s and early 1970s had begun to wane. Changing social values, strained government budgets, and the shift of public attention to other concerns all contributed to reductions in support for interpretive programming. Caught in the backwash of the earlier natural environment emphasis, historians and cultural site interpreters felt ignored. Riding a historical tide of wavering support for interpretation, federal agencies focused their attention and resources on other issues and projects (McKendry, 1987). The national organizations for interpreters continued their struggle with identity, focus, and direction. University interpretive training curricula declined in number, as did many of the recreation and other natural resource programs in which they were housed.

Benchmarking as Part of a National Status and Trends Effort

Evolution in any organization is an ongoing process, but currently there appear to be major shifts in the field of interpretation, making this a particularly timely and important opportunity to benchmark the current status and trends. As part of a national study on the status and trends of interpretation in the United States, two groups of seven national leaders in interpretation (including practitioners, academicians, association officers, and federal agency representatives) worked through a modified nominal group process during the St. Louis workshop. They identified and prioritized current trends in interpretation, basing their judgments on significance in terms of impact as the trends will affect future planning and implementing of interpretive services.

The results of this process (Tables 1 and 2) matched closely in content (though ranking in some cases was different) the responses of interpretation academicians to a written survey. In all cases, the trends seem to be at least partially in response to broader national trends: changes in demographics; changes in lifestyles and cultural values; increasing sophistication of technology and information dissemination systems; the shift from federal to state and local governmental responsibility for many domestic issues and programs; and the globalization of our political, economic, and environmental systems.

The most highly ranked trends, in terms of significance, can be classified into broad categories: changes in funding approaches and shifts in providers of interpretive services, expansion of roles of interpretation and program emphases, changes in techniques and media, and changes in audiences and where they receive programs. In reading the results, it's important to remember that the identified trends are merely that...trends that have been identified. They aren't necessarily directions that are espoused or rejected. In some cases, the changes are controversial. What's important is to identify and acknowledge them, and then to assess them in light of philosophical and pragmatic concerns.

Funding Changes and Shifts in Providers

The first-, second-, and fourth-highest ranked changes dealt with shifts in funding approaches for interpretive services. Increased emphasis on marketing has initiated more systematic planning based on user/target market assessment. The intents are to more closely match program offerings with user needs and wants.

A substantial decrease in federal, state, and local funding of interpreters and interpretive services has been followed by a controversial increase in user fees for such services. Many interpretive services have been contracted out by government agencies. Additional privatization is evident in stronger links and cooperative ventures between government agencies and the tourism industry. All of these efforts almost demand a marketing orientation because business and users/visitors will pay only for those services and programs they are interested in and feel are worth their time and financial investment.

As funding strategies have changed, so have the providers. Traditional agencies still provide interpretive services, but often they are done jointly with various segments of the private sector: tour operators, trip guides, and resort and ski lodge owners. Occasionally agencies combine staff and financial resources to provide visitor centers and programming for adjacent sites. There has been increased growth in interpretive programming at county and city levels in some areas. Volunteers and docents, often members of "friends" organizations, are providing increasingly more front-line interpretive programs.

Expansion of Roles and Program Emphases

One encouraging trend is the realization of and reawakening interest in the roles that interpretation can play. Included in this surge of interest, however, is an emphasis on expanding the roles of interpretation beyond traditional uses. Though not entirely a new role, use of interpretation as a management tool is receiving increasing emphasis. Interpreters are being included as part of management teams to assist in planning and programming to reduce user damage to natural and cultural resources, and for garnering user awareness and support for politically sensitive issues (such as importance of bio-diversity, threats of acid rain, bioregionalism, and problems of encroachment by development and pollution).

Additionally, there's more use of interpretation to enhance agency images. Though interpretive programs are still undervalued and undermonitored in many areas, in some places managers are recognizing and assessing the economic impact of such programs. Barriers between interpretation and recreation are dissolving.

Changes in Techniques

As our nation goes high tech and citizens are bombarded constantly by video and television, interpreters are responding more often with use of interactive computer displays, videos, and other high-tech communications media. Increasing demand for experiential, hands-on, and participatory programming has prompted an increase in the use of interactive displays, "furry folks" and other gimmicks, and themed special events.

As much as many visitors are attracted to the participatory and personal programs (perhaps a response to Naisbitt's (1982) high-tech/high-touch phenomenon), changing lifestyles and nonwork time availability have created a substantial demand for nonpersonal interpretation. To meet this diversity of needs, there has been an increased level of professionalism and sophistication in interpretive design, planning, and presentations.

Changes in Audiences and Where Interpretation is Presented

Changes in audiences and where programming is presented are closely associated with the expansion of interpretation's roles. Because of major shifts in the demographic makeup of the population, there are associated changes in potential audiences. Perhaps the most noticeable change is that the population is aging. Interpreters are realizing that more older, retired adults who are healthy, mentally alert, and who have substantial amounts of discretionary time and money are eager to learn (often more in-depth than many traditional programs address issues) and participate. This group is particularly appropriate for interpretation associated with travel and tourism. Also, they often demand increased sophistication of programs.

Increasingly, we are giving more attention to providing interpretive services to broader segments of the society. This includes programming for the disabled, for minorities (evidenced by the increase of urban and outreach programs), and for the increasing numbers of our foreign-born population.

The "echo boom" children, children of the baby-boom generation, are finding their way onto playgrounds and into schools, creating a need for additional children's programming. In some areas, environmental education is integrated more frequently with outdoor education and outdoor skills programs in the schools. Field courses such as Project Learning Tree and Project Wild are two examples. Agencies are becoming more involved with traditional school systems as many of them continue to integrate environmental education into their required curricula. More programming is taking place at zoos, museums, and other less traditional sites.

In some areas, especially urban areas, there appears to be a renewal of interest in the outdoors and in traditional "park ranger" roles. This is evidenced by a new ranger corps program, a cooperative venture in a major urban park system. Additionally, many traditional interpretive organizations are expanding their off-site programming. This is often during off-season and in urban areas where it's difficult for some people to travel to the actual sites. Interpreters may be seen at state fairs and boat shows or heard on the local radio station.

Conclusion

These changes haven't come without challenge or controversy. Increasing the roles of interpretation demands an increase in the training, knowledge, and skills needed by field interpreters and planners. It also raises the question of whether interpreters cease to be interpreters when they fulfill so many other functions.

At the same time the level of sophistication of some interpreters is increasing, there's the fear that increasing use of minimally trained volunteers, docents, and seasonals threatens the overall image and level of professionalism of interpreters. Additionally, increased use of nonprofessional staff requires that professional interpreters have skills for and spend more time in administrative and supervisory duties.

Some fear that a marketing approach is a way of selling the "interpretive soul"...there may be many messages interpreters feel are important, but which users may not "demand." On the other hand, a marketing approach doesn't mean ignoring all other needs and missions of interpretation, nor offering only those programs that the masses may be attracted to.

User fees for programs potentially can block participation by some sectors of the society unable to afford the fees. This raises questions regarding equitable offering of programs. Strategies and guidelines then must be developed and implemented to ensure equitable opportunities for participation in interpretive programs, especially those offered by public agencies that have a mission to serve the general public.

These and other issues are legitimate and deserve attention. But it's only after identifying and acknowledging both the trends and their implications that we can analyze them and act upon them in a responsible manner. It's only then that we can be proactive rather than reactive.

Bibliography

AIN/WIA Consolidation Committee. 1987. Proposed Bylaws. Submitted to memberships for a vote.

McKendry, Jean. 1987. Personal notes for *National Park Service Interpretation: The Future is Now.* Presented at the National Interpreters Workshop, St. Louis, MO, November.

Naisbitt, John. 1982. *Megatrends.* Warner Books. New York, NY.

Vander Stoep, G. A. 1988. Rumblings of Resurgence: Expanding Roles and Techniques in Interpretation. *Trends.* NPS/NRPA (in press). Washington, D.C.

Vander Stoep, G. A. 1988. Interpretation: Benchmarking Current Status and Trends, Identifying Issues and Future Needs. Proceedings, Benchmark 1988: A National Forum on Outdoor Recreation and Wilderness. January. Tampa, Florida. (In press).

Table 1. Results of nominal group technique as compared to survey of interpretation academicians.

The Most Important Trends in Interpretation

Trends	Frequency of Listing	% of People Listed By (n = 14)	% of Total (58) Responses (n = 58)
Increased marketing in offering of interpretive services: • More user/target market assessment • Systematic planning	10	71.0%	17.0%
Decrease in government funding (federal, state, local), with subsequent increase in user fees	8	57.0%	13.8%
Use of interpretation as management tool/inclusion of interpreters as part of management team	6	42.9%	10.3%
Increased privatization of interpretive services, including more contracting out by government agencies and stronger links with/provision by tourism industry	5	35.7%	8.6%

Increased use of computerization and other high tech techniques	5	35.7%	8.6%
Increased level of professionalism in interpretive design, and planning and in presentation of personal interpretation	5	35.7%	8.6%
Changes in audiences including increased needs of and use by disabled, minorities, foreign born, aging; increased sophistication of audiences	4	28.6%	6.9%
Increased controversy over types of training needed by professional interpreters (general vs technical)	4	28.6%	6.9%
Reawakening of role of interpretation; expansion of roles beyond traditional uses	3	21.4%	5.2%
Increased use of volunteers/ docents with corresponding need for more administrative and supervisory skills of professional interpreters	3	21.4%	5.2%
Increased networking, interdisciplinary work, and more cooperative ventures	3	21.4%	5.2%
Program content addressing current environmental and other issues more often than in past	1	7.0%	1.7%
More programming in museums, zoos, other non-traditional sites	1	7.0%	1.7%

Table 2. Other trends identified by nominal group participants, not ranked among top five most important or influential.

Other Trends

Managerial Trends

- Barriers between interpretation and recreation are dissolving
- More use of interpretation to improve agency image, agency propaganda
- Interpretive programs still undervalued and undermonitored in many areas
- Interpretive managers beginning to assess the economic impact of interpretive program implementation (often to justify such programming)
- Land management agencies as a whole are recognizing the importance of bio-regionalism; this is being reflected in interpretive programs

External Trends Affecting Interpretation

- Increased international environmental awareness
- National associations more interagency oriented than previously

Trends Regarding Youth

- Mandatory environmental education/interpretation programs in schools
- Increased interpretive programming for very young children (preschoolers)
- Young people (in some population segments) are increasingly exposed to natural and cultural resources

Trends in Interpretive Providers

- Increased growth in interpretive programming at county and city levels

Trends in Potential Audiences/Participants and Their Program Preferences

- Increased discretionary time and money in many segments of the U.S. population, though both are decreasing for some professional segments; correspondingly, patterns of available discretionary time are changing
- Broader segments of society are seeking natural and cultural interpretation
- Increased sophistication of users makes interpretive planning increasingly more challenging

- Increased experiential, hands-on, participatory programming
- Increased demand for non-personal interpretation
- Increased sensitivity to minorities

Trends in Who Interprets and in Training of Interpreters

- Increased percentage of females are applying for entry-level interpretive jobs
- Entry-level interpreters do not have an adequate balance between technical knowledge and communications skills

How did it Happen? Solutions to the Challenge of Interpreting History

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Abstract

This paper summarizes four different areas of historical interpretation: using a historical artifact as the basis for creating an exhibit, creating a historical event, restoring a historical site, and transferring historical slide programs onto film.

Anne Vieira

Look at That! Historical Artifacts as Exhibits

In 1984, the U.S. Army Corps of Engineers entered into an agreement with the International Centre for the Study of the Preservation and Restoration of Cultural Property (ICCROM) to restore a folk art mural, c. 1900, by an unknown itinerant artist. The plaster mural had been painted on an upstairs bedroom wall of a farmhouse which was purchased by the government because of its location downstream in the floodplain of the Clarence Cannon Dam. Although no one had lived in the house for a number of years, local people had long known of the existence of the mural. While the painting was determined to have no national significant value, the management staff recognized the local cultural significance and decided to save it as an exhibit of local history for the M.W. Boudreaux Visitor Center. The restoration of the mural illustrates how an agency can preserve a piece of local history and incorporate it as an artifact into an exhibit. It also demonstrates that some of the most interesting artifacts can be found, literally, in your own backyard. Knowing what you want and how to get it are often the biggest limiting factors.

To determine what kinds of artifacts you might want, look closely at your subject matter. For example, a visitor center being built at a lock and dam on the Mississippi River has a variety of themes which might include: construction of the locks and dam, dredging, environment of the river, transportation, worldwide commerce, and much more. Once you have a total list of all the possible themes, the search for artifact sources can begin.

1) Check inside your own agency. Make everyone aware of your project and what you need by sending a memo throughout your office.

2) Look through periodical and newspaper indexes for articles on your subject. They offer current contacts of professionals in the field.

3) Go to the library. Many small towns have libraries which contain information on local history found nowhere else.

4) Submit an article to the local newspaper describing your subject and asking for support.

One source generally leads to several others. Before you know it you are wondering what to do with all this "stuff." An inventory of your resources on a computer program will help you keep lists, names, and other information organized. This inventory should also become part of the contract for exhibits.

Once you have a solid inventory of what is available and where, a professional exhibit firm can assist you in developing the final story line, determining what artifacts and photographs you want to use, and creating unique exhibits for your museum or center.

Nancy Rogers

Having Fun with History--A Primer for Community-Based Events

The San Francisco Bay Model is a three-dimensional hydraulic model operated by the U.S. Army Corps of Engineers to study the complex water movement patterns of San Francisco Bay and Sacramento-San Joaquin River Delta.

The associated Bay Model Regional Visitor Center offers a variety of visitor and education programs on the environmental, historical, and cultural interests of the Bay area. An important component of the Visitor Center's programming involves community-based events.

Background

Sausalito's rich artistic traditions as an art colony have been largely lost or ignored in recent years as the social, political, and demographic structure of Sausalito has changed. The art history event, "PASTART: A Sausalito Retrospective, 1930-1960" is an example of how your facility can co-sponsor an interesting, unique, and fun event involving all segments of the community.

Getting Started

1) Review your facility regulations, charter, or guidelines to determine if your planned event will conflict.
2) Research local history through the local historical society or library.
3) Determine what you can provide (i.e.: facility space, materials, PR services, money, etc.).
4) Locate community co-sponsors via local organizations, clubs, or businesses.
5) Coordinate a planning committee of interested parties or organizations.

What to Include

1) Determine your quality vs. quantity parameters.
2) Decide what your feelings are on authenticity.
3) Establish historical time period, geographical area (i.e.: Sausalito only).
4) Include a good cross section of historical information and skills. It should be relevant to your area.
5) Establish clear guidelines on what to include that all members of the committee agree on and why.

How to Work with Community Co-Sponsors

1) Make sure your committee members don't have an ulterior motive for being involved in the event. For example, running for public office or developing some sort of power base within the community.
2) Make clear your agency or facility restraints and regulations. Hold firm to them or you open yourself up for problems later on.
3) Work with co-sponsors as equals. Your ideas are important, but so are theirs. Their support and interest will help generate community support and volunteer services.
4) Financial assistance can be obtained by working with a local nonprofit organization as a co-sponsor. The nonprofit organization can obtain community grants from your local Chamber of Commerce, local service organization, or historical society.

5) Just because it's your facility doesn't mean you and your staff do all the work. Be sure someone is appointed as coordinator. All committee members should assist to some degree in locating volunteers.

Conclusion

History events that involve community partnership and sharing can lay a foundation of goodwill, support, and respect that carry well beyond the few days of a successful event.

Gregory A. Miller

Restoration and Interpretation of a 19th-Century Farmstead

Many of you have a historic building at your site that's worth protecting and interpreting, but you're reluctant to tackle the job because of limited experience, funds, staffing, or a combination of these. This summary will provide you with a basic approach to interpreting a small historical site with a limited budget.

During the construction of Harry S. Truman Dam and Reservoir near Warsaw, Missouri, the 1-1/2-story John Hooper House was determined eligible for the National Register of Historic Places. In 1982, the U.S. Army Corps of Engineers entered into an agreement with the Advisory Council on Historic Preservation to relocate and preserve the structure in the Corps recreation area where security could be provided. The relocation and reconstruction were finished in 1984 at a site near the visitor center where the structure would be readily accessible to the public.

The interpretive planning process for the Hooper House began by researching all available historical resources. The information gathered focused on the family history and their lifestyle, cultural aspects of the time period, prevailing architectural style, and history of the specific locality. Many documents were used including government manuscripts, abstracts, legal records, maps, and family oral histories. This information formed the basis for developing the interpretive objectives.

Other important aspects of the planning process involved creating a physical plan for site development, selecting finishings and furnishings, and appropriate interpretive techniques. The budget for the interpretive task was small, so selection of the technique emphasized economy.

A key to effective interpretation of a small site such as the Hooper House is a strong set of objectives and theme statements. These objectives should emphasize site uniqueness; however, it's also important to link the specific with the universal. For this reason, interpretation of the Hooper House is designed to help the visitor understand the lives of the Hooper family and at the same time, point out their shared characteristics with the larger social history of their times.

Other important aspects of a cost effective interpretive program for the site included inexpensive interpretive signs, publications, exhibits, and the use of volunteers for personnel services.

Stephen B. Austin

Transferring Slide Programs to Film

Transferring slide/sound programs to 16mm motion picture film can be an effective way to present and preserve slide programs. However, is it economical, efficient, and wise to do so? A case study of the advantages and disadvantages will be discussed by analyzing the process as it was used in transferring the slides to film.

Building A Nation–The Corps Since 1775

Building A Nation was developed in 1984 to illustrate the history of the Corps of Engineers. The slide program was well received and many Corps districts and projects requested to have their own copy. The problem of mass producing a 450-slide, six-tray, two-projector, Tiffen-programmed slide show became obvious...and the cumbersome task of transporting and presenting this program at a visitor center or campfire program was also obvious. A survey was conducted to determine what medium (slides, film, video) would best serve the projects. Film was the overwhelming choice. In 1987, the Corps contracted with an audio/visual firm to transfer the slide program to film and release 175 16mm color sound prints.

The steps we used in accomplishing this task are as follows:

1) The production of the slide/sound program synced to a Tiffen Pro-Dissolve Unit.

2) The clearance of all copyrighted material.

3) Transferring (under contract) the slide program to film.

   The contractor required the following materials:

   a) The master audio soundtrack (preferred 1/4" reel-to-reel tape at 7 1/2 or 15 ips).
   b) The completed slide set.
   c) A video tape copy of the slide program showing the exact slide timing, dissolve rates, special effects, etc.
   d) A hard copy of the entire program with the narrative, song lyrics, instrumental sections, and sound effects indicated in the order of occurrence.

4) The production (under a separate contract) of 175 16mm release prints.

The transfer procedure (step 3 above) cost approximately $270 per screen minute and the release prints (step 4) cost about $7.50 per screen minute.

Slide-to-film transfer is a viable option and agencies and firms should investigate the advantages and disadvantages of this process. Although less expensive than shooting a full-action film ($270 vs. $2,500-$3,000 per screen minute), this medium still represents a sizable investment in time and money. The program *Building A Nation* is a good example of this process and an excellent way for many sites in an agency to tell its story to mass audiences.

Teachers as Interpretive Planners: An Alternative View

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Abstract

A class of 24 teachers in northern Illinois developed interpretive plans for eight previously undeveloped natural areas. With the help of their university instructor, the teachers located sites, determined the feasibility of developing them, chose specific audiences, and developed and implemented plans. In developing their plans, teachers worked with local, state, and federal agencies. The result included better informed citizens and programs to benefit their entire communities.

Introduction

We teach on the Faculty of Outdoor Teacher Education for Northern Illinois University. Our program works with inservice and preservice teachers, helping them to learn how to use the outdoors to enhance and enrich their curricula. We have found that many teachers are eager to take their students to natural areas. However, many of the sites that could be used for interpretive and educational purposes have no programs due to limited funds, interest, or manpower. Those with programs are often booked to capacity. Additionally, limited school funds often restrict trips to sites within a short distance of schools or to the school grounds themselves.

One Solution--Course Design

During the spring, 1987 semester, the standard Outdoor Interpretation course was offered. In this course, teachers learn the basics of interpretation, visit and critique programs, and develop their own programs. They also develop interpretive plans for existing undeveloped sites. The plans developed by this class seemed so immediately useful, we didn't want them to be wasted. So we decided that rather than simply writing plans and hoping perhaps some of the plans would be used, the class would follow through and develop them, implement them, and test them with several audiences.

A series of courses was then developed to reach the goal. The second course was Field Science, in which teachers visited proposed sites, learned how to identify what was there, and inventoried basic resources. The third course in the series was Advanced Interpretation, in which teachers used proposals written during the first course and the information gathered during the second course to develop packages of interpretive programs for various audiences.

Course Implementation

The ideal plan didn't work quite as expected. Most of the teachers enrolled in all three courses. But some were new to the third course and needed a quick foundation in either interpretation or field science. When we divided into teams, inexperienced people were grouped with experienced so that each team would have someone with a background in interpretation and someone with a background in field science. A few people who joined the third course late had their own sites in mind and worked independently of the experienced students. This meant that they needed immediate, special updating.

Each team met with the instructor at least three times during the semester to check plans to date. People from teams not scheduled to meet joined the scheduled team at any time. Those without previous experience frequently attended other group meetings. Those who chose not to attend the scheduled meeting, met with their own teams and continued to work on their own plans.

The entire class met as one large group four times during the semester. They then shared projects and progress to date. This sharing provided each team with additional project ideas which they could add to their own.

At the initial meeting, the class discussed the sites for which plans would be developed. A representative from each team presented why the site had been chosen, the advantages to be gained from developing a program for the site, the audience in mind, and the general objectives and format of the projects.

Three large and three small projects were proposed and eventually developed. The large projects had been proposed the previous year. The small projects were proposed by people new to the program. Initial attention was directed toward small projects. Although the teachers working with small projects were inexperienced in interpretation, with help they developed admirable programs.

Course Results

The first team new to the program consisted of two junior-college biology teachers. They were interested in making their classes and other students aware of an overlooked reflecting pond in front of their college. One, a microbiologist, began to use microorganisms from the pond for her classes, since students found them more interesting than prepared slides. The other, an anatomy instructor, planned comparative studies between pond microorganisms and humans. They also prepared slides of life in and around the pond to interest students in an environmental biology course and to entice prospective students to consider attending their college. A final project was a beautiful set of posters displaying microscopic life found in the pond. The other teachers in the class eagerly collected copies.

A second team consisted of two elementary teachers, with no previous interpretive experience, who hoped to use the small woods behind their school. During our initial meeting in the dead of winter, the abundance of life in the small woods almost overwhelmed them. Their project was to develop a guide to use the woods to complement the prescribed curriculum. They obtained major objectives for basic areas of the curriculum for all grade levels from K-6, and listed suggested outdoor activities which would fulfill curricular goals. Their final product was a curriculum guide and extensive bibliography made available to all teachers in their school. It was immediately met with strong parent support. A Thanksgiving pageant in the woods will be one of their first large-scale dramatic presentations.

Still another team developed uses for what had been, 15 years previously, a district environmental center. Biology classes inventoried natural resources, industrial arts classes built bridges, community groups helped clean up the area, agriculture classes planted native species, and language and journalism classes wrote news releases accompanied by photos taken by the camera club. A program for grades K-12 was developed. A grant proposal submitted to the Non-Game Funds Program of the Illinois Department of Conservation is still pending.

One of the three larger projects under consideration since the previous year involved a marsh and fen owned and managed by the county and supported by the Nature Conservancy. The site had a limited program: a one-page, triple-fold flier with a map of the area. The county conservation district had no funds to develop any further programs, but was delighted with the prospect of free, professional help from the teachers. Since teachers working on this site came from four districts, each decided to seek funds from his/her own district. Completed projects will be shared. A comprehensive plan, beginning with a slide program for use by intermediate school children through adult groups was developed. Copies of the slide program will be donated to local libraries and made available through school resource centers. Its objective is to present an overview of a rare natural area as well as to entice people to visit and study the site. All projects included a self-guided trail map.

Other projects developed included:

- An animal and track guide for use with elementary students
- Activities for primary and elementary students focusing on trees
- Aquatic studies including biological and chemical testing for junior high and high school students
- A bird program, including lists and illustrations found in the area, migration dates, and suggested viewing spots for the general public, designed with senior citizens in mind.

The second of the three large projects focused on a site owned by the St. Charles school district. This site had very limited use for over ten years. A few work sheets, some curriculum materials, and a basic plan were developed for the interpretation class, but other than that, nothing had been done. Since it was owned by the school district and was very close to the city itself, teachers from schools in the district felt a need to develop its potentials.

The site had been deeded to the district with the stipulation that it be used for educational purposes or revert to the original owners. One of the first tasks of the committee was to discover if and when it had been used. Another was to determine the actual boundaries, which were being impinged upon by abutting residences. Records of local, state, and federal agencies were examined for pertinent information and maps were studied. Study guides, primarily for science classes, were developed. A youth work corps volunteered time and energy needed to clean up trash and build trails. When the local newspaper heard of the project, they sent photographers and reporters to prepare a special report. A valuable resource which was almost lost was regained.

Possibly the most exciting site was discovered quite by accident by one of our graduate students who was exploring the city looking for natural areas. Since the site was a former girl scout camp that she had attended as a child, it held special meaning for her. She researched the site, its history, current condition, and the feasibility of developing it as an educational resource for the local schools for her comprehensive examination.

The former camp had been purchased by the city of Elgin, and was listed on planning maps as a park. A subcommittee of the park district was thrilled to have the assistance of five trained professionals providing free consultation on its development. However, it was becoming impinged upon by local landowners, much as was the St. Charles site. Additionally, one of the team members accidentally came across evidence that the city was about to secretly trade part of the land to an oil storage operation for condemned land. Local residents were rallied and provided welcomed support--they would far prefer school children to oil tanks on the land behind their homes.

The principal of the adjacent school promised a meeting room for groups coming to study the site until the old buildings were renovated. The team prepared a slide program to convince citizens of the need to preserve and use the area. It has been presented to subcommittees, the park district, and the city council. The League of Women Voters has chosen the site as the subject of an intensive study. A budget for cleanup, restoration, and development was submitted to the City Council. The budget was prepared in great detail, from sustenance through intermediate to the maximum funding levels.

The buildings will be preserved and restored, trails will be built and made accessible, educational programs will be developed, policing and safe management will be planned, and a full or part-time director/manager/ educator/interpreter will be hired. This plan could serve as a model for other projects of citizen involvement in saving natural areas and restoring them to educational and interpretive uses.

Conclusion

At the final class meeting, the general consensus was that this had been one of the most exciting, educational, and fulfilling experiences of the teachers' careers. It must have been, since none of the teachers stopped working on their projects when the semester ended.

Jump on the Dinosaur Bandwagon:
Dinosaurs as a Tool for Interpreting Natural History

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Abstract

It's easy to see that the most captivating topic in science today is dinosaurs. Dinosaurs is a topic we can't ignore, in fact it is one we can use in any setting. It is a topic which fascinates young and old because of its mysteries. Dinosaurs show us that science isn't stagnant but always changing. They allow us to use our imagination; the possibilities seem endless.

Interpreters often ignore dinosaurs because their parks have no dinosaur fossils. Cranbrook Institute of Science disregards these limitations and uses dinosaurs as a familiar starting point to explore fossils, anatomy, ecology, extinction, evolution, taxonomy, and other concepts. Hands-on activities and simple props are used in the Institute's Fossil Lab, dinosaur programs, and after-school classes. Many of these techniques can be used in any setting, including yours.

Jump on the Bandwagon!

America has gone dinosaur crazy! Images of "terrible lizards" are every where. The A, B, C's in alphabet soup have been replaced with noodle dinosaurs. Forget the gummy bears, kids today eat gummy dinosaurs. In 1987, a special exhibit of seven Dinamation dinosaurs (1/2 and 3/4-size moving replicas) drew over one year's attendance in only 13 weeks at Cranbrook Institute of Science. Some people have even replaced the old pink flamingo on the front lawn with a model Stegosaurus!

Great, but why did I jump on? Why not let the media and toy companies exploit dinosaurs by themselves? Besides, we have no dinosaur fossils in our state. All of these were valid arguments, but I was overwhelmed by the numerous concepts that can be learned from dinosaurs.

Why Dinosaurs?

Visitors age 3 to 93 are entranced by dinosaurs. I'm always amazed by preschoolers who can't say spaghetti, yet they easily pronounce Stegosaurus. Our imagination goes into action when we think of animals no human has ever seen. After 160 years of research many questions remain unanswered. Anything seems possible, nothing is entirely right or wrong.

Studying dinosaurs teaches us a great deal about modern as well as ancient life. Dinosaurs faced the same ecological principles as animals today. They are an excellent tool to capture our audience and lead them to a variety of topics.

Cranbrook Institute of Science offers a variety of programs concerning dinosaurs. One of our most popular school programs is simply titled "Dinosaurs." In the Fossil Lab, school groups and public visitors can watch highly trained volunteers reconstruct a Triceratops skeleton and even work on real fossils themselves. Three new programs on dinosaurs were also developed for the temporary exhibit of Dinamation dinosaur replicas. The Institute also offers a variety of after-school classes, some using the theme of dinosaurs. Each of these programs covers the three basic concepts detailed below. The techniques and activities featured are derived from these programs.

How Do We Know?

I always begin a school program with this question. This is an important question in reconstructing the past of any geographic area. A discussion of fossils follows covering what fossils are and how they are formed. I use real as well as cast replicas of dinosaur fossils and also local fossils. The participants are always interested in their own local fossil history.

Fossils of bones, teeth, footprints, feces, etc. are an excellent way to convey the process of scientific inquiry. I hold an articulated skeleton of a cat in front of the group and ask them to tell me something about the animal without telling me the animal's name. Through observation, the group tells me that it was a good runner, a meat eater, had good eyesight, and more.

In the public area of the Fossil Lab, visitors work on common fossils and bones as a paleontologist would. A hand lens is used to search for fossilized shark teeth in beach sand and fossilized rodent bones in harvester ant hill material collected in South Dakota. At one table, participants are given a pile of sheep bones which they are to reassemble. Another table is scattered with concretions which have been split open to reveal fern fossils inside; participants must match the concretion halves together like a puzzle. While none of this material is from a dinosaur, the basic concepts of paleontology are explored.

What Was a Dinosaur?

Recent media attention has also perpetuated many myths about dinosaurs. They are still lumped together with mastodons, saber-tooth tigers, and pterodactyls, yet these lived at different times or were not dinosaurs at all!

Here is an excellent opportunity to discern reptiles, amphibians, and mammals, and create interest in reptiles alive today in your own area. Grouping animals by similar characteristics is an important scientific process. A simple classification game can demonstrate that there were a great variety of dinosaurs: meat eaters, plant eaters, some that walked on four feet, while others walked on two, etc.

What About Modern Life?

An after-school class at Cranbrook has students build a dinosaur diorama out of the corner of a shoe box. They include everything a dinosaur needs to survive: plants, water, sun--and complete it with a clay model dinosaur. Five-year-old students are suddenly discussing dinosaur habitats and food chains.

Older students glue chicken bones to a piece of cardboard and build their own imaginary dinosaur. Then they create a name for the creature and a fact sheet listing diet, habitat, and geologic era. These concepts can be applied immediately or later to local modern life.

Our school group program usually ends with another question, "What happened to the dinosaurs?" Once again the five year olds know the answer as they stumble over the word "extinction." We then discuss all the theories of why dinosaurs are extinct. This is an excellent opportunity to review earlier concepts. Certainly one of the most important concepts to convey today is extinction and the delicate balance that has always existed on earth. Sometimes we discuss locally endangered or extinct animals as well. Finally, I conclude that no scientist knows why the dinosaurs are extinct. I encourage my audience to continue their study of dinosaurs because new information is uncovered every day. That is what makes dinosaurs so intriguing!

Bibliography

Bakker, Robert T. 1986. *The Dinosaur Heresies.* Morrow, N.Y. 481 pp.

Benton, M. 1984. *The Dinosaur Encyclopedia.* Simon & Schuster Inc. N.Y. 188 pp.

Charig, A. 1979. *A New Look at the Dinosaurs.* Mayflower Books, N.Y. 160 pp.

Colbert, E. 1983. *Dinosaurs: An Illustrated History.* Hammond Inc. N.J. 224 pp.

Halstead, B. 1975. *The Evolution and Ecology of the Dinosaurs.* Eurobook, Ltd. 116 pp.

Halstead, B. 1978. *Prehistoric Reptiles.* Gloucester Press, N.Y. 32 pp.

Lambert, D. 1983. *A Field Guide to Dinosaurs.* Avon Books. N.Y. 256 pp.

National Wildlife Federation (staff). 1984. *Ranger Rick's Dinosaur Book.* Washington, D.C. 95 pp.

Norman, D. 1985. *When Dinosaurs Ruled the Earth.* Exeter Books. N.Y. 80 pp.

Norman, D. 1985. *Illustrated Encyclopedia of Dinosaurs.* Crescent Books. N.Y. 207 pp.

Sattler, H. 1981. *Dinosaurs of North America.* Lothrop, Lee and Shepard Books. N.Y. 151 pp.

Wilford, J. 1985. *The Riddle of the Dinosaurs.* Knopf. N.Y. 304 pp.

Market Segmentation of Interpretive Participants at National Park Service Sites

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Abstract

The 1985-1986 Public Area Recreation Visitor Survey (PARVS) provides the data for the analysis of interpretive participants and nonparticipants at National Park Service (NPS) sites. Data were collected by on-site interviews in randomly selected NPS sites. Using a market segmentation framework, interpretive participant and nonparticipant profiles are being developed based on sociodemographics, social group, trip profiles, and activity and expenditure variables. Of the 6,275 cases, participation rates in specific interpretive activities ranged from 7 percent to 48 percent. Measurements of intensity and extensity of participation are being used to delineate interpretive participation patterns that, when combined with other information collected, have produced distinct market segments. The study will provide NPS planners and interpreters, as well as those at similar sites, a methodology and detailed information for understanding, planning, and marketing for particular interpretive market segments.

Introduction

Interpreters, perhaps more than any other segment of the parks and recreation leadership, have long been imbued by the "know your audience" gospel. Yet, the framework within which they practiced is product oriented. The National Park Service has a strong social marketing role in communicating to its various publics concepts of conservation and use. Under these legislated mandates, a product orientation must coexist and the interpreter must find ways to define market segments that recognize this coexistence. The interpreter must understand visitor profiles well enough to know how to package what the visitor is seeking with what the organization is selling.

As demands on leisure time and individuality increase there's a need to recognize that all visitor needs are not alike. Market segmentation is a tool that can be used to divide the market into homogeneous parts such that any part could be selected as a market target and reached with a distinct marketing mix (Kotler, 1975).

Market segmentation is a "creative conceptual art that results each time in some particular view of marketing structure" (Kotler, 1972, p. 99). This concept undoubtedly holds true when considering attempts by recreation researchers to describe their visiting populations. A plethora of variables have been used in the past from social characteristics to more complex psychographic characteristics, all of which have shown greater or lesser degrees of ability to differentiate between groups. When using a market segmentation strategy the "crucial consideration is whether or not consumers in different segments respond" (Kotler, 1971, p. 92) to different marketing mixes. The market segments must have differing needs be it for a differentiated product or simply a differentiated product advertisement or appeals strategy.

Within interpretation, and specifically the National Park Service, it's often too costly and too difficult to obtain what might be considered "higher-end" data on attitudes and values. Therefore developing a national data bank and procedure for differentiating interpretive market segments that can be tested and then monitored can potentially assist the interpreter and planner in:

- Efficient allocation of resources
- More effectively meeting visitor needs
- Providing opportunities to increase the interpretive user market share.

While researchers in other facets of recreation have delved into attitudinal and behavioral oriented studies, the interpretive field has concentrated the bulk of its research, outside testing of interpretive media, on descriptive reporting. Not without merit alone, descriptive reporting can be enhanced by developing a framework to be used for implementing the results of the descriptive studies. Additionally, correlational studies add utility by accounting for differences in the observed user groups.

The need for a market disaggregation framework that helps define differences between visitor groups and recognizes the dichotomy of the product and market-oriented perspectives prompted this analysis of a national database in a market segmentation view. This study is seeking to develop sociodemographic, activity, and trip profiles for interpretive participants and nonparticipants. The extent to which the interpretive participant market could be further segmented is also explored.

Method

The Public Area Recreation Visitor Survey (PARVS) was initiated in 1982 to gather data about visitors to recreation areas. The study design consisted of a three-phase data collection process: on-site interviews, follow-up mailed questionnaires, and recreation site information for a total of 1,100 variables. These instruments were used to gather data on recreation and travel patterns, value of recreation to the visitors, value of the site to the visitor, and economic importance of visitors to recreation areas. The questions and variables were designed where possible to replicate those on the

1977 Federal Estate Recreation Surveys and Bureau of Census studies. PARVS was conducted jointly by five federal recreation agencies and twelve state recreation agencies. Over 36,000 interviews were collected nationally by trained data collectors from randomly selected recreation areas across the U.S. from Summer 1985 until Spring in 1987. Although analysis of the aggregate data has been performed to date (Cordell and Hartmann, 1988), this study analyzes only the National Park Service data--specifically the interpretive-related data.

Analysis of data is being carried out using descriptive statistics and multivariate discriminate analysis. The descriptive analysis will provide measures of central tendencies and categories with the raw data summed. Multivariate analysis provides an opportunity to look at a number of variables in relationship to each other and will explain the relationship in terms of predetermined research objectives.

The objective which is guiding this study is to develop activity and trip profiles for interpretive participants and nonparticipants based on select demographic, social group characteristics, extent of participation in activities, intensity of participation in activities, travel patterns, and expenditure variables.

The statistical null hypothesis to be tested is that there's no difference between interpretive participants and nonparticipants. Rejection of this hypothesis implies that by using the variables and the population in this study, interpretive market segments can be identified.

In addition to simply addressing the difference between interpretive participants and nonparticipants, the study seeks to further segment participants based on their intensity or level of interpretive participation. By better understanding these segments, parks will be able to better target nonparticipants and low-use participants and retain medium and high participants.

Results

A total of 6,692 interviews were conducted of which 6,275 were usable. Initial analysis found that participation in interpretive activities ranged from approximately ten percent for personal interpretive activities to thirty-six percent for nonpersonal activities. Forty-eight percent of park users visited museums or visitor centers, twenty-eight percent went on self-guided walks and twenty-seven percent read wayside markers. Ranger talks drew fourteen percent of park visitors while campfire programs drew seven percent.

Analysis of the aggregate PARVS data set has shown that age, gender, and education are useful in predicting recreation behavior. Preliminary analysis of the NPS data are indicating that gender, income, education, rural/urban origin, and activity participation all may be useful in developing segment profiles. Further data analysis will reveal true explanatory power of these variables.

Interpretive participants are being described using a formula based on intensity (number of times a visitor participates in any one activity during the park visit) and extensity (the total percentage of visitors participating in an activity) of participation. Intensity is showing merit for detailed explanation of the data.

At the time of publication further analysis was forthcoming. Detailed results will be presented and the final results will be made available.

Summary

Segmentation is a desirable tool because it can assist the managers and interpreters in fine tuning their delivery systems to:

- Efficiently allocate resources to meet the needs of the visitor
- Focus market attention on those segments that best fit the National Park Service's competencies and mandates
- Provide opportunities within a heterogeneous consumer market for interpretive services to reach more visitors and to be more effective

Segmentation isn't without its drawbacks. It requires an enormous amount of information and unless the segments are distinctly different than efforts at reaching the market segments may simply waste resources. Careful selection and evaluation of market segments is needed.

The analysis of PARVS data provides an opportunity for NPS to take an in-depth look at their interpretive audience both active and potential. Further research may be warranted to determine the extent to which data on needs and attitudes can confirm the derived market segments. Further study may also be productive in determining the success that differing marketing mixes may have in reaching these market segments.

Bibliography

Burdge, R.J. and Donald Field. 1972. Methodological Perspectives for the Study of Outdoor Recreation. *Journal of Leisure Research,* 1(4): 63-72.

Christensen, James E. and Dean R. Yoesting. 1973. Social and Attitudinal Variants in High and Low Use of Outdoor Recreational Facilities. *Journal of Leisure Research.* 5 (Spring), pp. 6-15.

Ditton, R.B., T.L. Goodale and P.K. Johnsen. 1975. A Cluster Analysis of Activity, Frequency and Environment Variables to Identify Water-based Recreation Types. *Journal of Leisure Research,* 7(4): 282-295.

Frank, Ronald E., William F. Massy and Yoram Wind. 1972. *Market Segmentation.* Englewood Cliffs, New Jersey: Prentice Hall, Inc.

Graham, R., P. Nilsen and R.J. Payne. 1986. A Marketing Orientation to Visitor Activity Planning and Management. A paper presented at the First National Symposium on Social Science in Resource Management at Oregon State University. Corvallis, Oregon.

Hartmann, Lawrence A. and Ken Cordell. An Overview of the Relationship Between Social and Demographic Factors and Outdoor Recreation Participation. In progress, 1988.

Howard, D.R. and J.L. Crompton. 1980. *Financing, Managing, and Marketing Recreation and Park Resources.* Dubuque, Iowa: W.C. Brown.

Kotler, Philip and Sidney J. Levy. 1969. Broadening the Concept of Marketing. *Journal of Marketing.* Vol. 33 (January). pp. 10-15.

Kotler, Philip. 1971. "Social Marketing: An Approach to Planned Social Change." *Journal of Marketing,* Vol. 35 (July 1971), pp. 3-12.

Kotler, Philip. 1975. *Marketing for Nonprofit Organizations.* Englewood Cliffs, New Jersey: Prentice-Hall, Inc.

Mullins, Gary Wayne. 1979. *Participation and Nonparticipation in Interpretation: A Study of People, Places, and Activities.* Unpublished dissertation, Texas A&M University.

Park and Recreation Technical Service Division, Western Regional Office. National Park Service. 1983. *Marketing Parks and Recreation.* State College, PA: Venture Publishing, Inc.

Romsa, Gerald H. and Sydney Girlig. 1976. The Identification of Outdoor Recreation Market Segments on the Basis of Frequency of Participation. *Journal of Leisure Research,* Vol. 8, No. 4., 248-255.

Tatham, R.L. and R.J. Dornoff. 1971. Market Segmentation for Outdoor Recreation. *Journal of Leisure Research,* 3(1): 5-16.

White, Terrence J. 1975. The Relative Importance of Education and Income as Predictors in Outdoor Recreation Participation. *Journal of Leisure Research.* Vol. 7(3): p. 191.

Determining Training Needs in Interpretation

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Abstract

Attendees at this session were asked to complete a questionnaire on their views of interpretation training needs. Copies of the survey results are available at the above address.

Introduction--Ann Wright

The President's Commission on Americans Outdoors called for continuing education to inservice professionals to better serve the needs of a public with changing interests and needs. Employers of interpreters are "demanding more diverse skills of current and prospective employees." Federal and state agencies are finding the well of qualified seasonals and interns drying up and are being forced to actively recruit applicants for the first time in years. Interpretation and related curricula are being discontinued or scaled down at many universities. What does this all mean...to public agencies and private organizations operating interpretation programs...to university interpretation programs...and to interpreters currently working in the field? And, what should we do about it?

Public Agency Operations and the "Birth Dearth"--Bill Sontag

Truly there are manifestations of the so-called "birth dearth" with us even now. Young people have a selection of summer and permanent jobs from which to choose and competing salaries to boot! Three years ago an eastern national historic site had 200 applicants for 35 jobs; in 1988 the same number of seasonal positions were sought by only 36 applicants. Interpretation agencies and organizations may be taking a serious look at aggressive, broad-spectrum recruitment for the first time in many years. In search of ways to prepare applicants for future positions, we must also consider systematic dialogue with colleges and universities; field interpreters and interpretive managers should be stimulating academic initiatives rather than waiting for academia to respond five to ten years after our "crisis."

In 1982, the National Park Service (NPS) recognized that the caliber and "evenness" of preservice training provided by colleges and universities was declining. NPS interpretive managers also recognized that centralized, inservice training events were becoming too expensive and inefficient to handle a perceived backlog of training demands. Regional Interpretive Skills Teams were created and prepared to respond to these needs with a repertoire of four standard courses. Briefly, the courses respectively address:

1) Basic, personal communications
2) Planning and design of interpretive media
3) "Special" forms of personal presentations
4) Publications preparation

Existence of qualified interpretive teams in each of the NPS's ten regions has fostered additional assignments for these groups. Evaluation and critique of park programs, delivery of courses in training techniques, and assistance in interpretive planning have been spin-off benefits from the teams.

The NPS has described a "core curriculum" of training and experience which, in turn, describes levels of qualifications for various levels of interpretive positions. This concept has merit, but is difficult to apply service wide in all situations; furthermore, little has been done to monitor the qualifications of individuals to ensure that the core curriculum is being pursued and obtained.

Training needs assessments are a tremendous logistical problem for an agency the size of the NPS. In short, monitoring of training needs for over 1,500 permanent interpreters and thousands more seasonal interpreters and then responding to those needs are as yet unmet challenges.

The University Role--Gary Mullins

For the most part, training in the natural resources field tends to be a random sort of event. Students enter universities with very unclear career goals which is to be expected and is acceptable. Universities either seek to train them in the technical issues or, on the other side of the spectrum, tend to make broad conceptual thinkers of them. We need a middle ground.

The university should provide students with:

1) The necessary background to pursue lifelong learning about resource management in general and interpretation in specific
2) Prerequisite skills to enter the job market
3) Increased abilities in conceptual and critical thinking
4) Preparation to take leadership in the field 15-20 years after graduation

Primary problems faced at the university level:

- Interpretive teaching faculty can control and prescribe only a limited number of courses. In prescribing those courses, which do we choose? Who's to say if a taxonomy course in local flora is more important than a public relations course?

- There's pressure from the field to produce a refined interpreter in four years; this is impossible. Each senior-level interpreter should realistically reflect on their skills on graduation day.

- The reality is that interpretation students are like salmon spawn--only a few will reach maturity. University faculty find this hard to convey and even harder to prepare the students in four years to do the job that needs to be done to help them gain the political sensitivity to move up. We encourage students to work hard and achieve, but when they see the starting salaries in interpretation they tend to ask "why?"

Low beginning salaries and high expectations are working against the recruitment of students into the natural resource field. Some people point to graduate training as the answer. Again, salaries don't compensate for an additional two years of academic work. Many organizations who want to hire M.S. graduates who already have solid field experience as interpreters want to put them in entry-level positions because they don't have experience in that specific organization. These are people with expertise in management, conflict theory, detailed scientific areas such as acidic deposition, biological diversity or marine education, education theory, communication, etc. They don't wish to go back to the entry stage.

Our field now has a better understanding of personnel needs for the future management trends for the future and training needs for the future. We need to look at the NPS Interpretive Challenge as a model. Where are we going? What type of people do we need to get there? And how are we to train them initially and on a continuing basis? Universities could better train interpreters if the National Association of Interpretation will support a major personnel needs assessment in our field.

We need to look closely at our interpreters' needed skills and knowledge. Due to the increased impacts on our environment, interpreters must become the *Islands of Hope* for environmental action, as Bill Brown wrote. The ve[illegible] resources we interpret are being threatened. I advocate a stronger science and/or history background for interpreters. Communication theory, public relations, sociology, psychology, interpretation/environmental education theory and practice courses, and resource management policy courses are needed on the undergraduate level. Training in computers, audiovisuals, exhibition, landscape architecture, architecture, etc., are also needed, but most B.S. programs provide only a limited amount of this subject matter.

If universities can only scratch the surface, where will the in-depth training come from--on the job and through the employer. Organizations need to set minimum standards of training and performance for salary increases and promotion in the interpretive ranks. Unions and certification aren't the answer. Those often become social and political institutions that have little to do with job performance. Minimum standards, though, are a lower-level strategy for encouraging professional growth.

We need to begin developing training opportunities that realistically fit the time, money, and interest factors of those who need and desire the training. To accomplish this, we should consider the following delivery methods:

- Short courses
- Long-term courses
- Training academics which train broadly (not limited to one agency)
- Agency-specific training academics (NPS--Harper's Ferry)
- Correspondence courses
- Video training series
- Local training groups (NPS regional skills teams)
- Published materials

Within organizations, training shouldn't be a mandated function from the top. It should be a response by cross sections of various units within the organization to meet the training needs of that organization.

For training to be effective it must be planned in a curriculum format. Spiral curricula prescribe basic knowledge and skill levels to be acquired. The process then builds on this basic knowledge in a systematic fashion connecting new knowledge to old. Each piece of new knowledge or skill is added for a particular purpose. Universities, agencies, the private sector, and professional organizations need to work hand in hand to better understand the lifelong spiral of interpretive curricula that is needed to meet current and future needs.

Naturalist's Notes: Mapping Your Journey

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Abstract

Keeping a journal of field observations can greatly increase the effectiveness of any interpretive organization. The notes can be used to keep track of species, increase your curiosity and your skills of observation, aid in the development of brochures, and assist in many other tasks. A system of note taking is easy to implement and very inexpensive. The notes can be organized by several techniques including the use of account cards or a computer database system.

Why Field Notes?

"As recently as ten years ago this species covered the entire rock ledge and was common throughout the park. As you can see it no longer grows here and I'm unable to locate it anywhere in the park. Do you have any idea of what may have happened to the plant? Others have reported that this species is particularly sensitive to pollution. The disappearance of it in the park corresponds with the construction of the power plant up river. It's my bet that the polluted air flows down river and settles in these canyons." "That's a fantastic observation! Where do you have your accounts recorded?" "I haven't really written down actual accounts but I do recall quite well the numbers"... "You don't have anything down in writing from the last ten years of observations?" "Well I have made occasional notes, I could probably find..."

This short discussion occurred at the closing of a hike with influential people who were prepared to have the park management altered and research done on the effects of pollution in the park. Needless to say, little was done.

A good system of recording field observations is essential to the operation of any interpretive facility. In this case field notes could have been used as evidence in a court case against the power company responsible for the pollution and provided the naturalists with a great deal of information on species distributions.

Species distributions are of utmost importance to the everyday function of a naturalist. Have you ever tried to make a "Birds of..." brochure only to find that, although hundreds of hours have been spent in the park, nothing more than the new "life-lister" has ever been recorded. Volumes could be written on the practicality and usefulness of field notes so why do so few do it?

How to Take Field Notes

At the core of every good field-note system is a simple notebook. The notebook should be a small, pocket-sized, bound book of some type. Generally the more portable, the more the book will be used. Every individual should pick their own type of notebook, one that they will use daily. What the journal looks like isn't nearly as important as what you put in it.

What to write down and what not to are the hardest questions to answer when first starting a journal. You must first decide what you want to do with the journal. Will it be used for species account records, justification of time spent, natural history research, or maybe to compile another *Sand County Almanac*? A notebook may be any combination of these. Most interpreters find a combination which emphasizes species records most useful.

All field journals should start with standardized header information. Date, specific location, time, other observers, weather, and habitat are most important. Habitat may be as simple as "creek edge" or "white cedar swamp" depending on your location. The weather may include temperature, wind, precipitation, sky conditions, elevation in mountainous regions, and tidal stage or water surface conditions on pelagic trips. Time at the start and end of trip should be recorded. This will yield information on effort as well as the time of day.

After the standard header comes the meat of the journal: species lists, sketches, ideas, observations, and other information which usually goes unrecorded. Record anything unusual. Write down interesting observations. Make note of questions or unknown species. Always be sure to record approximate numbers. Knowing 20 roadrunners were seen at one location on a particular day is much more valuable than the "X" for the day. If you think you are recording too much think back to the goals of your notebook.

In addition, always try to record maximum detail with minimum effort. This may call for a brief sketch or a photograph of the subject. Codes may also be useful. You may want to adopt codes from a breeding bird atlas project or make up your own such as: N\4e for nesting with 4 eggs or bl for blooming. Regardless, always be sure to clearly document your codes. Remember, the greatest usefulness of your notes may be in 20, 50, or 100 years from now.

Making Your Notes Usable: The Manual Techniques

Field notes are not a new idea. Some organizations have elaborate systems already in use. Some of these old and proven techniques warrant mention. Mosby (1971) describes many of these methods in detail, making the book an invaluable reference for anyone developing a department or agency-wide system. Remsen (1977) describes a simple method developed by Joseph Grinnel of the Museum of Vertebrate Zoology, University of California, Berkeley. This system uses the field notebook described earlier and calls for the addition of species account cards.

The species account cards are simply brief accounts of important species and/or an index of observations. It contains a list of all the sightings of a particular species and detailed notes about those sightings (Figure 1). These accounts can be kept on index cards or loose paper and filed by subject. If the observation overlaps several subjects, file it under the most pertinent subject and make note of it under the other index cards

(Figure 2). Species accounts may not be needed for every species depending on the goals of your field notes.

By using the account cards you develop an index which can be used to access unusual observations and species. This system costs little or nothing to establish and keeps copying and editing to a minimum. However, you will still have to consult the original notebook for the specific information. This system doesn't usually help with common species and can become unmanageable for a very large number of observations.

Making Your Notes Usable: The Computer Techniques

The old proven methods are good and will continue to be the standard for recording most field observations. However, the computer makes it possible to keep more notes in a more organized and retrievable manner than ever before. The easiest way to organize the field notes is on any one of the database programs on the market. A database is one of the most useful tools available to the computer user and can be used to keep track of inventory, membership or guest lists, slide files, and program plans as well as field notes

Observations can be organized by two methods: copy all of your observations to the database, or use it as a substitute for the account cards. Generally, the less copying and editing done to your notes the better. However, you will soon find out how useful your notes can be when properly organized in a database. Putting all of your notes into the database will allow you to retrieve any observation by searching for key words in the file. For example, you recall making detailed observations of the nesting habits of a yellow-breasted chat while working at a different park several years ago. You would simply ask the database to list all records that contained chat and nest.

If you have made several similar observations you could ask it to search for a location containing "Lincoln SP" to get the exact observation. Entering all of your notes will also allow both you and your employing agency to have complete copies of your field work. The database is such a powerful and versatile tool you may soon want to add a record of your work activities, a catalog of photographs, and other record keeping tasks to your field note system.

Bibliography

Cable, T.T. and D. M. Knudson, *How to Keep and Publish Natural History Records,* Purdue University Forest Recreation Guide #13.

Mosby, H. S. 1971. Making observations and records, p. 47-51. *Wildlife Management Techniques.* R.H. Giles (Ed.) The Wildlife Society, Washington, D.C.

Remsen, J. V. 1977. On Taking Field Notes. *American Birds* 31: 946-953.

Figure 1. Two pages of a field notebook show header information and different types of observations. Species accounts, observations, photo records, and visitor data can all be kept in a field notebook.

Naturalists Field Notes—Record Observations Daily

Date: 2/20/88
Time: 3:00 p.m. to 4:00 p.m.
Observers: Nick and Nanette
Weather: 30 degrees, light snow, wind NW 25mph
Habitat: City
Location: Purdue Campus--Ag. Area

Species & Observations:

~80 cedar waxwings,
~15 starlings,
1 American kestrel (Nan only)
2 purple finches,
4 mourning doves

The flock of waxwings are back in the persimmon tree. They seem to stay overnight in the woods and make their rounds throughout the day. They visit Lilly, the persimmon tree, the hawthorns around the Ag. bldg. then off to some unknown feeding spot. They show up in the persimmon tree the same time everyday. The main flock sits high in the tree while individuals take turns at the hawthorn berries. I wonder how their travel will change when the berries run out.

Naturalists Field Notes—Record Observations Daily

Date: 6/21/88
Time: 8:00 a.m. to 11:00 a.m.
Observers: Nick
Weather: 95 degrees, sunny & clear
Habitat: Forest edge at pond
Location: Chestnut Ridge and Richart Lake Trails

Species & Observations:

2 yellowthroat
7 cardinals
11 white-tailed deer
1 house wren
3 chipping sparrows
4 mallards (female with chicks)
~10 killdeer
2 wood thrush
15 cardinals
1 black rat snake
1 song sparrow
6 robins
1 wood duck (female)

11, 12, 13 Photos (250mm, 1/225, f/5.6)--Deer feeding, location marked on map.

10 boats on Starfield Lake--popular fishing area.

Figure 2. An account card for a species would include a date, location, and numbers. An account card for observations would have a date and a one-line summary. Both types of cards would be filed alphabetically.

Northern Copperhead
(*Agkistrodon contortrix*)

6/28/85: Lincoln State Park, IN
1 adult, trail 3 near old homesite.

7/10/85: Lincoln State Park, IN
1 juvenile, youth camp.

7/15/85: Lincoln State Park, IN
1 adult, youth camp.

Interpretation for the Preschooler

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Abstract

In 1985, the Tilden Nature Area of the East Bay Regional Park District began offering the "Tilden Tots" program. We had found a general lack of interpretive programs specifically geared to the special physical needs and developmental skills of preschoolers. "Tilden Tots" is designed for three- and four-year olds, each accompanied by a parent. Program themes change monthly and tap into the natural inclination of young children for exploring. The "Tilden Tots" program and format has proven to be successful.

Introduction

It's obvious that reaching children at an early age--teaching them to love the out-of-doors as infants and toddlers--is a desirable goal. But how? Tots and toddlers are so different than adults or older children--can you even remember being two or three or four? Preschoolers ability to communicate is rudimentary by adult standards. How do we know what they are thinking or perceiving? It often seems too confusing, too much of a challenge, and even threatening. But with some insight and a lot of enthusiasm, most anyone can find the joy of working with very young children.

From the time a child is 18-months old until about four or five, he/she experiences a very rapid learning pace. By the age four or five years, the personalities and general attitudes of young children are fairly well developed. Of course as they grow, attitudes will be altered, and experiences will be added, but for the most part a five-year old is "who" he/she is and who he/she will be for the rest of his life. That thought alone is enough to motivate every interpreter to work with the very young.

We designed the Tilden Tots program specifically for three- and four-year olds (accompanied by an adult) because they are an important audience. We target this age level because their mental and physical development is high enough to make working with them in a group manageable: Yet there is generally a lack of interpretive programs geared specifically to them.

What We Offer in "Tilden Tots"

We work with many preschool classes, but we wanted to offer a program that stressed the interactions among parents, their children, and nature. The goal of our program is two-fold. For the children we provide a fun, positive nature experience during their most formative years. We believe it will help them develop a sense of caring and a basic understanding of the natural world which will provide a strong foundation for their future. For the adults we provide a wealth of interesting, usable information on the natural environment, be it insects, plants, spiders, snakes, or fall colors. We act as positive role models for interactions with their children. And we provide the parents and children an opportunity to explore and discover together the wonders of our natural world.

Program Specifics

Group Size

After experimentation, we found that a group of 15 children, each accompanied by an adult (parents are most effective) works well. Sometimes one parent brings two children: this is much more difficult for that adult. Sometimes a child is accompanied by two or more adults (grandparents love to come along). We have also worked with 18 children and their parents, but we found that to be too large a group. One experienced interpreter could probably handle eight to ten children and their accompanying adults, but if "tot interpretation" is new to the interpreter, we suggest starting with six or seven children and adults to discover the dynamics of this age group.

Format

We offer Tilden Tots program twice each month (once on a Wednesday, once on a Tuesday or Thursday), 10 to 11:30 a.m. This gives parents enough time to get to our park without being too rushed, and the children are more alert and less cranky than in the afternoon. The theme of the program changes each month, but we like to use the same basic format for each of our tot programs. This enables the children who return from month to month to recognize an order for what we do. When the parents arrive, they check in at our reception desk, pay a small materials fee, and receive name tags for themselves and their children.

We begin the program in a room with everyone sitting on the floor. We greet everyone, learn the names of all the children, and explain what we will be doing that morning. Using pictures, drawings, or objects, Sara talks about our theme. We try to have things that the children can touch and see, as well as something active for them to do (role playing a seed sprouting, tasting different plant parts, etc.). Linda then tells a story or teaches everyone a song. After 15 to 30 minutes of indoor activity, we get dressed for the weather (putting on ponchos and boots if it's raining) and head outside to do some exploring.

We select a trail with a gentle terrain that has lots of textures and colors. We may choose to go past the pond or through a meadow and forest or over to the lake to see the ducks. However, we don't always stay on wide trails; sometimes our exploring takes us along very narrow trails with lots of underbrush (a great adventure!). As in all good interpretation, our choice of trail depends on our theme for the day and the outlook of the group. We are usually outside for 30 to 45 minutes, guiding the parents and children with suggestions of what to look for and where to look. We constantly stress the different senses, since that is how preschoolers learn best.

Around 11 a.m. we return to the nature center to do a craft project and have a snack. Children easily accomplish our craft projects with the help of their parents. Projects relate to the theme of the day. We also try to provide a snack that goes along with the theme and is basically healthful (gummi worms is our big exception). Be aware of common children's allergies (peanuts, chocolate, dairy products) when you decide on your snacks. We always have an alternative snack on hand for the few children who may have allergies. At 11:30 a.m. we say good-bye to the children and their parents, inviting them back to the next month's Tilden Tots and telling them of other up-coming family programs.

Sample Program Outline

"Hoppers, Crawlers, and Fliers"

Program Description

Learn to "beat bushes," peek under rocks, and "sweep fields" to find insect friends. We will make insect antennae for children to take home. For three- and four-year olds each accompanied by a parent. Materials fee: $.50/child. Reservations required.

A) Introduction

1) What makes an insect an insect? Using large insect model introduce the different parts of an insect.

2) How insects are like us and how they are different.

3) How insects move--hoppers, crawlers, and fliers.

4) Different kinds of insects--use insect collections.

5) Where do insects live?

B) Story, "The Little Brown Cradle"

A paper-cut story about a little brown cradle that weathers the winter to reveal a beautiful moth. From *Paper Stories* by Jean Stangl, David Lake Publishers: Belmont, CA, 1984.

C) Hike: Bug Hunt

Using sweep nets, bug boxes, and beating sheets, visit different plant communities (meadow, shrubs, lawn, under logs, etc.) to see what's there.

D) Craft: Antennae activity.

From *NatureScope:* Incredible Insects, "Tuned-In Tots", p. 7.

E) Snack: Chocolate ladybugs (homemade).

Terrific Tot Topics

Reptiles--A close look at our scaly friends (snakes and lizards). Each child gets a small piece of shed skin to take home. Make toilet paper roll snakes.

Wet and Wonderful Wildlife--Introduction to slugs, worms and newts. During the outdoor hike and search, conduct a worm race. Good snack: gummi worms.

Pond Study--Visit the pond and see what's wiggling, squiggling, and diving there. Make walnut sailboats. Good snack: goldfish crackers.

Birds--Make toilet paper roll binoculars, then go on an easy bird walk to look for nests and listen for birds. Feed ducks at pond.

Animal's Homes--Things animals need to survive and what they use for their homes. A hike to search for homes and animal signs (food, holes, tracks, sounds). Make pine cone/peanut butter/birdseed feeders.

Pumpkin Hunt--Go on a treasure hunt to find a pumpkin filled with snacks. Collect items for making masks. Make paper-plate or paper-bag masks.

Fall Colors--Introduce colors and rainbows. Take a rainbow hike and collect leaves of different colors. Make leaf prints on T-shirts using textile paints.

Egg-citing Day--Look at different colors and shapes of chicken eggs at the Little Farm. On nature ramble look for nests and eggs of birds, sow bugs, and ants. Make grass nests. Make animals from hard-boiled eggs and vegetables.

Native Americans--Introduction to some things the Ohlone Indians may have used to survive here. Taste cattails. Learn stalking techniques and play hoop and stick game. Make tongue-depressor stick dice.

Honeybees--Look at observation hive, show and try on beekeeping equipment. Hike and visit places a bee would visit--water, flowers, taste eucalyptus nectar. Taste two different kinds of honey. Make peanut butter/honey/raisin balls as craft and snack.

Try It, You'll Like It!

If you're an interpreter thinking about working with preschool children, here is our advice in brief:

- Emphasize the senses
- Don't be too concerned with naming everything
- Take advantage of your sense of play
- Follow our basic format if you like
- DO IT!

You can find yourself having a great time leading a rewarding and enjoyable program for little ones. As was once written, "If you would preserve the wilderness, teach a child to love it."

Bibliography

Braus, J. editor. *NatureScope.* National Wildlife Federation: Washington, D.C.

Cornell, J. B. 1979. *Sharing Nature with Children.* Ananda Pub.: Nevada City, CA.

Fiarotta, P. 1975. *Snips and Snails and Walnut Whales.* Workman Publishing Company: New York.

Jorgensen, Black, Hallesy, and Hone. 1978. *Manure to Meadow to Milkshake.* Hidden Villa Environmental Project: Los Altos, CA.

Machlis, G. and McDonough, M. 1978. *Children's Interpretation: A Discovery Book for Interpreters.* Government Printing Office: Washington, D.C., Stock# 024-005-00713-0.

Sisson, E. 1982. *Nature With Children of All Ages.* Prentice-Hall: Englewood Cliffs, NJ.

Stangl, David S. and Stangl, J. 1984. *Paper Stories.* Lake Publishers: Belmont, CA.

Supraner, R. 1981. *Fun-to-Make Nature Crafts.* Troll Associates: Mahwah, NJ.

Supraner, R. 1981. *Fun With Paper.* Troll Associates: Mahwah, NJ.

White, S. and White, B. N. 1980. *Childhood: Pathways of Discovery.* Harper and Row: New York.

Naturalist Training: What the Beginning Naturalist Needs to Know

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Abstract

Training seasonals, volunteers, or student naturalists is one of the most important events of the year at most interpretive facilities. Unfortunately, these training sessions are often limited to site orientations and a one-way flow of instruction on program techniques. Surveys and experience indicate that programs are most successful when interpretive staff members understand each other and the agency's interpretive objectives, and share in the responsibility for program planning and delivery. This isn't a happy accident, it takes planning.

Introduction...Involve the Participants

Do you want your training sessions to be more exciting? Do you sometimes wonder why your employees are uncommitted or lack imagination when creating programs?

Successful programs interpret the site and involve the visitor. Likewise, good training should be a dynamic process of learning about the area and active participation by the trainees in the techniques of interpretation.

Use Advanced Organizers

Expectations are set and learning begins before anyone arrives at your training program. Factual information on natural history and operational procedures can be better understood if they are received before the workshop. They also show your agency's commitment to each new individual and can create positive feelings about his/her upcoming training.

Moving to both a new "home" and work site at the same time can be very stressful. These advanced organizers allow trainees time to digest information prior to this period of change.

Develop Staff Cohesiveness

A good training session draws energy from the group. Effective introductions can help to develop a cohesive and cooperative staff. They can set a precedent for active participation throughout training and the entire season.

There are helpful methods that are seldom used for fostering understanding between people working under pressure. It's possible for everyone in the group to learn how the others prefer to work and solve problems. There are numerous personality indicators (such as the Myers-Briggs) that can measure these individual traits.

We are all eager to "learn" more about ourselves in a quick, fun session. The results, when shared, can help eliminate false assumptions and second guesses about motives of fellow staff members. The more you know about each other's personalities, the easier it's to accept differences and work toward common goals.

Share Agency Objectives

Trainees are seldom mind readers, yet we often assume they understand the agency's goals and interpretive objectives without a thorough orientation to them.

Newcomers can't interpret the special story of your site unless they fully understand it themselves. Helping visitors discover the unique natural forces and cultural stories at your area should be the number one job of the naturalist; it's the primary reason that our parks, preserves, and centers are set aside. If you don't have clear goals and objectives for your site, then clarifying them for your trainees is an opportunity to help everyone on your staff to refocus on a common goal.

"Nuts and Bolts Training"

The bulk of information you disseminate during a brief training program may soon be forgotten, but the inspiration should motivate people to keep learning throughout the season and beyond. It's tempting to forsake involvement and experiences for the more expedient techniques of "telling them what they need to know." It's well documented that people remember best what they experience personally.

A group that plans and shares interpretive presentations during the training session will be more prepared and self-confident when it's time to give their first program. Group planning techniques are especially fun and can encourage risk taking that is too intimidating for a lone individual.

Basic communication skills for interpretive seasonals should include practice and feedback in leading talks, walks, and slide programs. Modeling these skills is essential, but peer observation can also result in confidence building and insights about presentation techniques. A training manual such as *The Nature Fakir's Handbook--Presentation Skills for the Interpretive Naturalist* can provide a conceptual framework and examples of specific interpretive techniques. A guide provides tangible information and checklists that can be absorbed at each individual's own pace throughout the season.

Without fuel, the enthusiasm ignited by an inspiring workshop will flicker out. A guidebook with concrete examples and references can provide fuel needed to grow throughout the year.

What Happened?

The outcome of any training session is an elusive thing to measure, but you can get some feedback immediately. A shared evaluation can leave the workshop participants with a feeling that the event is complete. It can leave you with some insight into improved future workshops.

Bibliography

Evans, Caroline Wakeman. 1984. Coaching--A System of Evaluating Interpretive Presentations. *The Interpreter.* Vol. XV, No. 4.

Harris-Regnier, Kathleen. 1988. *The Nature Fakir's Handbook: Presentation Skills for the Interpretive Naturalist.* University of Wisconsin-Stevens Point, Foundation Press Inc.

Krueger, Otto and Janet Thueson. *Type Talk.* Delacourt Press, New York, NY.

Lewis, William J. 1980. *Interpreting for Park Visitors.* Eastern Acorn Press, Boulder, Colo.

Mills, Enos. 1932. *The Adventures of a Nature Guide.* Houghton Mifflin Co.

Samples, Robert. 1975. Educating for Both Sides of the Human Mind. *The Science Teacher.* 42(1).

Interpreting Local History and Land Use Values through a Public Archaeology Program at the Manor House Site of Lord Stirling

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Abstract

To uncover some of the local history in the Basking Ridge area, a self-supporting public archaeology program was begun at the residence of Lord Stirling, a general in the Revolutionary War. A professor from a local university supervises this project, a dig, on Sundays throughout half the year. Once a year, the dig site is open to the public for a cutural festival that attracts over 2,000 individuals for interpretive programs.

Introduction

William Alexander, Lord Stirling, was a top general in the Revolutionary War and a friend and confidant of George Washington. Quite famous in Colonial times, he is all but forgotten now, due perhaps to a combination of a premature death and bad public relations. His grand country estate, located in Basking Ridge, New Jersey, is now the site of an environmental education center. More than two centuries ago, it was not only a center of high society in colonial New Jersey, but it was also a model for resource-based small industrial development and a showcase for state-of-the-art experimentation in horticulture and animal husbandry.

The only part of the original estate that remains intact is two brick "slave's quarters" and a portion of the cellar that underlies the present house. A self-supporting public archaeology program has been at work for five years to uncover the extent and grandeur of Stirling's dream, and has discovered artifacts of 225 years of continuous human habitation on the site.

History of Lord Stirling

William Alexander assumed the title of Earl of Stirling, authorized by the Scottish Parliament, based on a hereditary claim to a long-vacant title. The British Parliament declined to acknowledge the title, possibly because of a land grant that was attached to it, which would have given Alexander title to much of the land that lies between Long Island and Nova Scotia. It's possible that his subsequent commitment to the Revolutionary cause was a partial result of this.

Stirling was an aide to the British Commander-in-Chief during the French and Indian War. He was friend to General Shirley, Surveyor General of New Jersey, then a political adversary of Royal Governor William Franklin (Ben's son), and brother-in-law to patriot Governor Livingston. Stirling was also an early supporter and trustee of King's College (now Columbia University). Appointed in 1775 to command the First New Jersey Battalion, Stirling eventually commanded every American Battalion but one, and was Commander-in-Chief of the patriot Army when Washington was called to Philadelphia to meet with Congress.

A young James Monroe was aide-de-camp to Stirling and many years later recalled his association with Stirling during his presidential campaign. Fellow surveyor George Washington was a close friend and at the wedding of Stirling's daughter, at Basking Ridge, gave away the bride. Congressman John Adams called Stirling "a fine officer." As a man of science, Stirling was an active member of the American Philosophical Society and had professional associations with Benjamin Franklin and John Bartram. Stirling died in early 1783, while in command of the Northern Department of the Colonial Army.

History of the Site

Located on the edge of the Great Swamp of New Jersey, about 35 miles west of New York City, the manor site has been in a rural and agricultural region until recent years. Despite the pressures of rapid suburbanization and astronomical land appreciation, it's ironic that the Great Swamp is subject to far less direct human impact than at any time since Stirling's era. This is due to the establishment of several parks and a National Wildlife Refuge within this vestigial glacial lake.

Stirling lost his fortune even before his death, due to some highly speculative investments and through the financial support of his own military enterprises. By 1779, the estate was put up for sale and since that time, residents of the site have had slightly more modest social requirements. What remained of the original Manor House burned down in the first part of the nineteenth century, and the present home, either the third or the fourth built on the original foundation, was erected in 1923, built from a kit ordered from the Sears and Roebuck catalog.

A century and a half of farming, several fires, and site regrading in this century have left a greatly disturbed site. The site includes evidence of over two centuries of human activity scattered under several acres of land surrounding the 1923 house, now used as an employee residence. Written records and historic documents provide a partial though decidedly incomplete picture of the nature of life at the manor site.

The Dig

Because the Park Commission is service and not research oriented, it was clear from the start that:

- An archaeological field project wouldn't be viable if large amounts of staff or financial resources would be required.
- The project must be oriented towards interpretation and education.

It was decided to package the project as a public program. A registration fee was charged to help cover the program's costs. In addition, arrangements were made with a local community college to offer credit, if desired, for dig participation. The dig is conducted on Sundays, through about half of the year. It's supervised by Dr. Alan

Cooper, an archaeologist who met our three criteria: 1) he lives close by, 2) he has outstanding qualifications and interest in the project, and 3) most importantly, he works for a small fee. Aside from the professional fee, the only other significant cost (other than the initial outlay for tools and supplies) is the rental of a portable toilet for dig participants.

Every dig unit is supervised by a volunteer who has at least two seasons of previous experience as well as specialized training provided by Dr. Cooper. Participants sign up for a ten-week season and receive experience in cataloguing and analysis when they are not on their knees.

Once a year in the fall, the site is open to the public. A archaeological open house and 1770's cultural festival is held, attracting over 2,000 people for interpretive programs around the site, displays of artifacts, colonial-craft demonstrations, and performances of eighteenth-century music.

The Payoff

Because this is a part-time project, with the annual equivalent of perhaps a month of work by 30 people, it may be many years before it's complete. It's a high-visibility program that receives considerable and sustained press coverage from local media and the *New York Times*.

The majority of the service area of the Environmental Education Center is composed of people who have moved to New Jersey in the last several years. The archaeological field project and the Festival have served the function of providing an awareness of local cultural history and values to many people who have lacked this perspective. In addition, these activities have served to highlight other center programs.

Bibliography

Nelson, Paul David. 1987. *The Life of William Alexander, Lord Stirling*, University of Alabama Press.

Valentine, Alan. 1969. *Lord Stirling, Colonial Gentleman and General in Washington's Army*, Oxford University Press, New York.